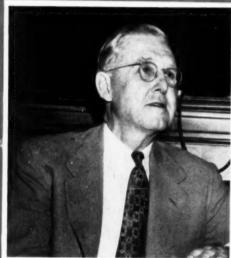
Chemical

February 27, 1954

Week-





Idaho Power's Roach: Will	he or
Uncle Sam provide cheap	power
for phosphorus?	

Noisy plan	ats a	re la	wsuit	bait:
production	men	now	conce	ntrate
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SRI's Hobson:	Of	in	stitu	te	s' tax-
free status-"	W	e b	ave	a	clear
conscience".		900			p. 71

Where does all the sulfuric go?

Gov	er	nm	ent
acid	's	enc	l us

MICH	RBOR	V	NNV
	TSI		

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SOLVAY'S nation-wide chain of

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From our research laboratories are coming a host of new discoveries about the ways both organic and inorganic tin chemicals can make other materials more efficient.

Organotin compounds, for example, are the best stabilizers known for polyvinyl chloride plastics.

Stannic oxide, another tin chemical, is the best opacifier for many glazes and enamels.

By addition of organotin compounds, the new chlorinated rubber paints have 5 to 10 times longer life under average conditions. And these are just a few of the ways tin chemicals can do more for you today.

Straits Tin, from Malaya, is 99.87% pure, and is world famous for its absolute reliability of grade. Whatever your product or process may be, it may profit you well to investigate thoroughly the properties and competitive advantages of the chemicals that now come from Straits Tin.

TIN NEWS, issued monthly, covers noteworthy current developments in the production, marketing and use of tin. Write for a free copy.



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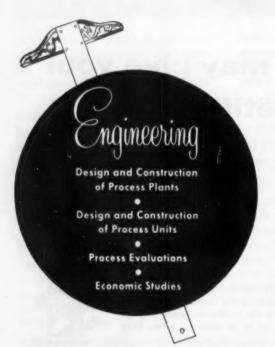


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Should you contemplate employing outside services for a study of all factors leading to a sound process evaluation, we'll be glad to discuss how we might be of help to you.

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Chemical Week-

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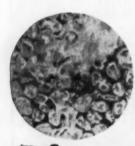




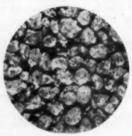
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(LEFT) Conventionally mixed material showing typical smears of unmixed materials. (RIGHT) Simpson mixed material showing complete uniformity of mix — which will remain in that form even in transit, or after long storage periods.





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OPINION.

Misleading Table

TO THE EDITOR: Although I am somewhat late in making this comment. I want to tell you that I found the table on p. 42 of your Jan. 23 issue utterly misleading. Any elementary book on statistics will explain the error. I am sure that most people who glanced at this table without studying it carefully would of course get the impression for instance that 11.7% of the firms having 100-999 salesmen use aptitude tests. Actually that percentage is 43.8%. The explanatory annotation above was I am sure either ignored or misinterpreted by most people. In any event the 11.7% is a figure devoid of any intrinsic significance. The only column in the table that has any meaning is the "total" column.

> HENRY O. MERTENS Syracuse, N. Y.

Our second thoughts convince us that Reader Mertens is right. Of all firms surveyed, 11.7% fall into the double category of using aptitude tests and employing 100-999 salesmen.—ED.

Two Readings

To THE EDITOR: I am a chemist, now the assistant superintendent in a rendering concern. I have been reading CW for about two years, with two purposes in mind-first: to get an overall picture of the business I am inhow the market, government, research are concerned in fats and oils, any new processes mentioned, etc. That means a fast glimming through on Thursday evening, when I receive CW-Market, Newsletter, Production and Research. Anything pertinent goes to our laboratory. I am doing this for my own advancement-to pick up as much broad knowledge of the business as possible. A second reading on the weekend fulfills my other aim.

My second reason is for general knowledge-new processes and discoveries in other unrelated spheres, industrial chemicals, drugs, pharma-

To this end I would like to see an

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

OPINION.

article now and then spotlighting one of the process industries—their methods, not their troubles, and not their secrets, but a general idea of what and how they do what they do . . . and still keeping CW's best aspect, keeping it brief and to the point . . . on reading. . . .

WALTER R. O'LOAN Brooklyn, N. Y.

Glycerine Future

TO THE EDITOR: Your market news article on glycerine (Jan. 30) is excellent. . . .

We have felt that the wide price swings since the end of World War II have not helped to maintain the premium position of glycerine. We hope that, with ample supplies in the foreseeable future, present prices will become stabilized.

With stable prices the incentive for research looking to additional uses of glycerine should be stimulated, as well as the recovering of some processes that have substituted other glycerides.

Mackenzie Macintyre President Alba Manufacturing Co. Aurora, Ill.

Incomparable Months

To the Editor: . . . Concerning the story "Inorganic Easing" (Feb. 13) . . . the general opinion I have derived from this article is that the production of chemicals, particularly inorganic chemicals, is declining, or as you have commented, "tapering off."

As a measuring of this tapering off you have noted "the score: some thirty-three dipped from October levels; only three stepped up in November." Study of the first two examples of this tapering off process—sulfuric acid and ammonia—shows that although total production fell for the month of November, the daily rate of production actually increased. Thus for at least two of the reported thirty-three dips there was no dip, but an increase. This is shown in the table that follows:

 $\begin{array}{ccc} \text{Sulfuric Acid Production} & \text{(tons)} \\ & \text{Monthly Rate} & \text{Daily Rate} \\ \text{October} & 1,210,900 & 39,061} \\ \text{November} & 1,207,504 & 40,188 \end{array}$

Ammonia Production (tons) October 198,556 6,405 November 194,886 6,496

I have not taken the time to go over the thirty-six items mentioned

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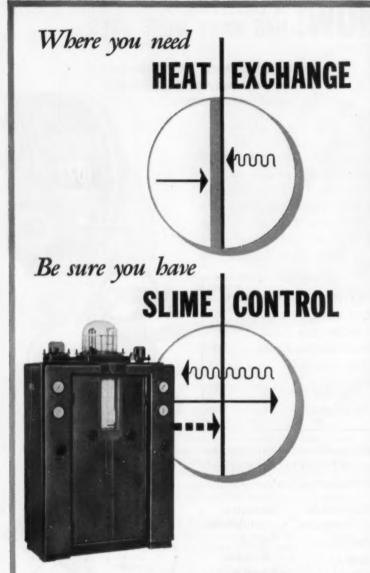
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CD-39

OPINION. .

but the mere fact that the most basic item, sulfuric acid, actually increased its rate of production casts a great deal of question upon the validity of the general conclusions.

HERMAN W. ZABEL Roger Williams Technical & Economic Services, Inc. New York

Reader Zabel has a good point. A month isn't always a month—in terms of comparable numbers of working days.—Ed.

Prosperous Strangers

To the Editor: Newspaper editors read your magazine, too. . . . I thought you'd like to see an editorial from the Feb. 10 issue of *The Orange Leader*.

MICHAEL O'BRIEN Orange, Tex.

Thank you, Reader O'Brien. Below are excerpts from the editorial.—Ed.

"CHEMICAL WEEK asks the question in its Feb. 6 issue, referring specifically to business prospects.

"The same question can be asked of Orange County on a range of subjects broadened to include all factors of economic development.

"But since Orange County's future is inexorably tied to chemicals, the analysis of that industry's future by CHEMICAL WEEK is valuable in projecting our own situation into the months and years ahead.

"As the magazine pointed out, bullishness or bearishness is an industrypervading question right now. And it is also pikestaff-plain that a lot of political capital is being made of recession and depression talk in Washington—and of depression and recession remedies or thwarting measures. And not to be overlooked is one simple truth: there's often more oratory than fact or logic in pronouncements from the Capitol. This, plainly, is an election year.

"The same issue of CHEMICAL WEEK bares a development that points up the effect of research on bullishness of the industry. This article begins: 'A new explanation of polyethylene's physical and mechanical behavior have been pieced together by a team of Du Pont research chemists.'

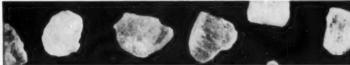
"What does that mean here?

"Recall, please, that Du Pont is the Mr. Big in polyethylene production and, with expansion now under way at the Sabine River Works, will have the world's largest facilities for making this product out on Adams Bayou.

"Recall too, that Spencer Chemical is just starting construction on a big

ways to make MORE PROFIT from paradichlorobenzene

All photos actual size



 REPACKAGE these big sparkling crystals, just as they come from the drum. A pound looks like more... has extra retail appeal.





ADD VARIETY to your mothicide line, with these finer, free-flowing crystals. They're ready to repackage as is—or can be perfumed without melting.

Pen No. 2



3. OFFER THIS SPECIAL fine size for sprinkling in folds and seams of clothing. This crystal size sublimes quickly, to give unusually high concentration of moth-killing fumes.

FEED YOUR POWER PRESSES with this size. It's just right for compressing into blocks

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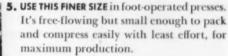


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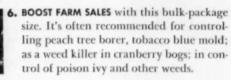
5. 5

and pellets. Flows very freely, so is ideal for automatic presses where dies must be refilled rapidly.
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- From the Salt of the Earth

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2RC6H4NH2+CI2CHCOOH--- (RC6H3NH)2 CHCOOH+2HCI

aniline or subst. anilines bis-(4-amino-subst.phenyl)-acetic acids

(In this reaction di-subst.-anilinoacetic acids may also be obtained.)

2C₀H₅OH + CI₂CHCOOH --- (C₀H₅O)₂CHCOOH + 2HCI

phenol

diphenoxyacetic sold

2NaOR + Cl2CHCOOH -- (RO)2CHCOOH + 2NaCl

sodium alcoholate

dielkoxyscette seid

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KAY-FRIES CHEMICALS, INC.
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OPINION. .

unit, which, added to Du Pont's mammoth works, will make Orange County the center of world production of polyethylene.

"It naturally follows that if the chemists turn up with a better understanding of the behavior of this product they'll also turn up with better, possibly cheaper, methods of production and more varied uses.

"Polyethylene, you might say, is a chemical with a future and Orange County's own future is all wrapped up in it.

"So we say again, for these and other reasons, talk of a recession or a depression any time soon in Orange County is foolish.

"That's why all those prosperouslooking strangers are in town."

DATES AHEAD

Drug, Chemical and Allied Trade Section, New York Board of Trade, annual dinner, Waldorf-Astoria hotel, New York, March 4.

American Institute of Chemical Engineers, national meeting, Statler hotel, Washington, D.C., March 7-10.

Chemical Institute of Canada, division of organic chemistry's third symposium, McGill Univ., Montreal, March 8-9.

American Chemical Society, 125th national meeting, Muehlebach hotel and municipal auditorium, Kansas City, Mo., March 24-April 1.

American Pharmaceutical Manufacturers Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., March 29-31.

National Farm Chemurgic Council, Inc., annual conference, Peabody hotel, Memphis, Tenn., April 5-7.

Assn. of Consulting Chemists and Chemical Engineers, symposium and banquet, Belmont Plaza hotel, New York, April 27.

Air-Pollution Control Assn., annual meeting, Patten hotel, Chattanooga, Tenn., May 3-5.

Forest Products Research Society, national meeting, Grand Rapids, Mich., May 5-7.

American Institute of Chemists, annual meeting, Hotel Berkeley-Carteret, Asbury Park, N.J., May 12-14.

Flavoring Extract Manufacturers' Assn., annual convention, Biltmore hotel, New York, May 16-19.

Chemical Specialties Manufacturers Assn., midyear meeting, Netherlands Plaza hotel, Cincinnati, May 23-25.

Manufacturing Chemists Assn., annual meeting and joint outing with SOCMA, Greenbrier hotel, White Sulphur Springs, W.Va., June 3-5.

. CHEMICAL

February 27

A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries

Pests Do Not Develop **High Resistance To** Pyrethrins, Allethrin

A recent report noted that the high resistance pests develop to some insecticides disappears when the insecticide is no longer used. However, about 12 generations of non-exposure to the insecticide must pass for pests to lose their resistance. Even then, it was indicated, the number of generations of effectiveness is likely to be less than before. Pyrethrins and allethrin were named as in-

secticides against which pests have not been able to develop much resistance. In October 1952, U.S.I. completed the nation's first fullscale plant for the commercial synthesis of allethrin. U.S.I. combinations of pyrethrins and piperonyl butoxide are well known under the trade name Pyrenone. Thoroughly tested formulations containing allethrin and Pyre-none, as well as the chemicals themselves, are available from U.S.I. to industry.

New Electronic Camera Takes High-Speed Pictures

A new camera reportedly can take a picture in only one tenth of one millionth of one second. Its speed is said to be so great that it can photographically chop a beam of light into separate segments. The shutter is described as a Kerr cell consisting of two screens of polarized material separated by a solution of nitrobenzene. An electronic device applies a high electrical potential across the cell. The shutter holds out light until the electrical charge realigns the molecules of nitrobenzene, thus permitting light to pass through the cell onto the film.

According to the manufacturer there are no

moving parts and the electrical power needed to take the picture is no greater than that required to light a Christmas tree bulb. The new camera promises to have a number of uses in the study of industrial processes, such as the observation of jet engine combustion.

Continuous Separation In New-Type Dry Classifier

A new type of dry classifier which continuously separates coarse and fine air-borne particles has been announced. According to the manufacturer it can be used in a closed circuit with a pulverizing mill, or as a selfcontained sizing unit for any moving stream of air-solids mixture.

The classifier is described as basically an inverted, truncated-cone shell with a motordriven, bladed rotor revolving on a vertical center axis inside the outer shell. The raw mixture of coarse and fine air-borne material is fed in from the bottom of the cone, passes upward in the annular space occupied by the whirling blades, describes a circular motion above the rotor, and discharges through a central opening in the top. Oversize particles are removed by the impact of the blades or drop out in the eddy-current above the rotor.

Cotton Growers Cut Cost Of Weeding as Much as 50% With CIPC Formulations

Show Excellent Promise for Soybeans, Legumes, Vegetables and Other Crops

Striking accounts of the savings in labor costs through the use of CIPC herbicides have been published recently. For example, one cotton grower's

Leading Ag Colleges Find Riboflavin Levels Too Low

Reports from leading agricultural colleges indicate that previously recommended riboflavin levels in animal feeds are too low for optimura growth and feed efficiency. Many experiment station authorities are increasing their recommendations for riboflavin additions to several times more than those of the Na-tional Research Council. Levels of supplemental riboflavin as high as 6 to 9 grams per ton of finished feed are often recommended.

U.S.I. offers a wide choice of riboflavin products derived from natural fermentation sources to meet the needs of the feed industry.

Antifoam Spray Is Aerosol-Packaged

Designed for foam control in the laboratory, pilot plant or other small scale processing a new antifoam spray is said to combine rapid speed with maximum effectiveness. The spray is an aerosol-packaged dispersion of silicone compound in freon. It blankets foam with a cloud of finely divided particles of silicone. In most cases, the manufacturer states, no trace of silicone can be detected in the finished batch after defoaming. Effective con-centrations of silicone are reported usually to range from 0.01 to 1.0 part per million, which is less than the 10 p.p.m. the Food and Drug Administration allows. The freon propellent vaporizes upon discharge.

Masking Tape Withstands Temperatures up to 375° F.

Masking tape designed for use in oven temperatures up to 325°F. is now available in 1/4 to 36-inch widths, according to a recent report. Laboratory and field tests indicate that the tape can be used in temperatures as high as 375°F. The new tape is said to remove cleanly from treated metal surfaces, leaving no adhesive deposit and to be capable of withstanding much longer bake cycles

It is thought that aircraft assembly, engine and parts manufacturers will be able to use the new tape for high-heat masking on treated metals such as anodized aluminum, pickeled steel and dichromated magnesium. Electronics manufacturers, among others in the metal finishing trade, should have need for the pressure-sensitive masking tape.

sy. For example, one cotton grower's hoeing costs were reduced from approximately \$12.00 to \$0.50 an acre in an area treated with 3 pounds of CIPC per acre. Chemical weed control costs under these conditions are reasonably constant at \$5.00 to \$6.00 an acre, indicating a saving of about \$6.00 an acre.



Hoeing costs to control weeds are about \$12.00 an acre in cotton fields like this.

According to the National Cotton Council, a substantial part of the cost of producing cot-ton is that of weed control — which previously has been done largely by hand hoeing. Today, however, the average cotton grower is faced with a steadily shrinking labor force and the necessity of paying higher wages. His labor costs are unpredictable, and any means of reducing them and saving money is an economic necessity. If for no other reason than this, more and more cotton growers are using CIPC weed control formulations.

CIPC formulations have been reported equal or superior to the best known commercial herbicides for cotton weed control. Two things assure their increasing use in this field; the fact that CIPC gives highly satisfield; factory weed control, and repeated dem-onstrations showing that it is the safest compound available.

Many Promising Uses
CIPC formulations are usually applied to the soil after planting but be-fore the emergence of the crop MORE plant. Although CIPC first

U.S.I. CHEMICAL NEWS

1954

CONTINUED

CIPC Cuts **Weeding Costs**

gained recognition for the control of weeds in cotton growing, it has excellent potentialities for the control of weeds in soybeans, sugar beets, certain legumes, vegetable crops,



Weed control results after application of CIPC at the rate of two pounds per acre. No manual weeding has been required. Plants are, bottom to top, green beans, com, peanuts, soybeans

strawberries, ornamentals and nursery stock. CIPC also has been used to control weedy grasses in fence rows, along roadways, in fire lanes, in perennial grass seed crops and in other miscellaneous crops.

Ten to Twenty Year Life For New Storage Battery

A new type of storage battery with a life expectancy of ten to twenty years has been announced as available to manufacturers for testing and appraisal. It is claimed that while the initial cost of the battery is two to five times as much as the conventional type, it lasts so much longer that the actual cost is perhaps half as much.

The new battery uses nickel cadmium cells of a special sintered plate type in place of lead. Reported to be unaffected by shock and vibration, and to eliminate the worry of over-charging, reverse charging or short circuiting, it contains an alkaline solution instead of acid and will operate at temperatures as low as 65 degrees below zero or as high as 165 degrees Fahrenheit.

It is "extremely effective" in keeping stored potatoes from sprouting, and recently published results indicate CIPC shows unusual promise for fruit thinning of peaches. There is every indication that the already large number of uses for CIPC formulations will expand in the future.

U.S.I. produces CIPC as a 70 per cent solution concentrate in xylene, from which formulators usually prepare ready-to-use herbicides containing 4 pounds of CIPC per gallon by adding emulsifiers and additional solvent.

The amount of CIPC used per acre will vary from 1 to 8 pounds. This depends on the crop and type of weed involved and on the type of soil. In general, as the soil changes from a light sandy loam to a heavy loam the amount of CIPC required for weed control will increase. CIPC is used under a wide variety of climatic and agronomic conditions, and there are, of course, variations in performance. Therefore, local authorities should be consulted for recommendations on its use.

Technical data on CIPC and IPC, another U.S.I. weed controller, are available upon request. The latest CIPC bulletin lists more than 70 helpful references.

PRODUCTS OF

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Stopcock grease for high vacuum use is available in three grades. The grease reportedly provides proper viscosity for temperatures from 60° to 110° F., shows very low hydrocarbon absorption, and permits pumpdown in vacuum systems.

(No. 1010) Fire-resistant translucent fiberglass panels designed for critical fire areas are claimed to offer adequate color stability. Uses include structural and decorative applications. (No. 1011)

A new flash-point tester is electrically-heated. A 150-watt heater and variable-power transformer with reproducible setting are reported to supply the close heat control needed by the ASTM D-56 test. (No. 1012)

A new paper making process uses 40% of cheap poplar wood, according to a recent report. Previously only 10 per cent of poplar has been successfully used, it was stated. In addition to special pulp grinding methods, a new chemical process was used. (No. 1013)

A new coal additive, described as simple to use, in said to reduce heating costs, do away with hard clinkers, eliminate odors and soot, and enable a banked fire to start up instantly. (No. 1014)

A copper plating process reportedly produces mirror brightness, avoids pitting of the cathode and holds brightener breakdown to a minimum. According to the developers of the process, it increases plating production up to 60%. (No. 1015)

For measuring fast pressure changes at tempera-tures as high as 5000° F., a new pressure pick-up is little larger than a cigarette. The instrument component is said to dispose of heat at a rate of 11 BTU's a second over each square inch of (No. 1016)

its surface. (No. 1016)

A new detergent for dry cleaning systems is said to increase the removal of water-soluble stains and to eliminate shrinkage, breaking and water stain. The detergent permits the use of larger amounts of moisture. (No. 1017)

Organosodium compounds and their derivatives can now be made economically, using finely dispersed sodium. A new booklet describes easy preparation methods using simple mixing procedures. Yields are said to be high, and reaction rates easy to control. (No. 1018)

A new microfilmer has been announced as offering five different reduction ratios and a choice of either 16 mm. or 35 mm. film. According to the manufacturer it provides a choice of three accepted methods of microfilming: standard, duo and duplex. (Mo. 1019)

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Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P.,
Absolute—200 Proof
Solox*—proprietary salvent—
regular and anhydrous

ANTI-FREEZE
Super Pyre* Anti-Freeze
U.S.I. Permanent Anti-Freeze

Ethyl Ether, U.S.P. Ethyl Ether, Absolute—A.C.S.

ACETONE-A.C.S.

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ACETIC ESTERS -Commercial Amyl Acetate—C Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate

PHTHALIC ESTERS Diamyl Phthalate Dibutyl Phthalate Diethyl Phthalate

OTHER ESTERS

Diethyl Carbonate Ethyl Chlereformate RESINS (Synthetic and Natural)
Arochem*—modified types

Arochem - modified types
Arochem - modified types
Arofene - pure phenolics
Aroflat - for special float finishes
Aroflat - for special float finishes
Curling phenolic
Aroplaz - clipts and allied materials
Aroplaz - continues modified allied

Aropol*—copolymer modified alkyds Ester Gums—all types Natural Resins—all standard grades

U . S . I .

INSECTICIDE MATERIALS

Allethrin CPR Concentrates: Liquid & Dust Piperonyi Butoxide
Piperonyi Cyclonene
Pyrenono* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Ratenane Products: Liquid and Dust

INSECTIFUGE MATERIALS Triple-Mix Recellents

INTERMEDIATES

Acetoacetanilide Acetoacet-ortho-chloroanilide Acetoacet-ortho-toluidide Acetoacet-para-chloroanilide Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G* 80

Curboy B-G* 80
or. Methicinine (Feed Grade)
Nicain, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B₁₂ and
Antibietic Feed Supplements
Vacatone* 40
ONER PRODUCTS

OTHER PRODUCTS

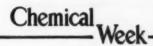
Acetaldehyde Caustic Soda Ethylene
IPC (Isoprepyl-NPhenyl Carbomate)
CIPC
Liquid Chlorine Metallic Sadium Metallic Sadium Methionine (Pharm.) N-Acetyl pt_Methionine Nitrocallulose Sains. Propionaldehyde Propionic Acid Sulfuric Acid Urethan, U.S.P. *Reg. U.S. Pat. Off.

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BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

How will 1954 turn out? There are as many shades of predictions as their are predicters (see p. 15). But by now there's no question about 1953—it was great. Annual reports are now rolling off the presses, and this is what they show:

• Spencer Chemical boosted its annual sales from \$29.5 million to \$32.5 million, its net from \$4.47 million to \$5.04 million.

• B. F. Goodrich sales rose from \$624 million to \$675 million; net climbed from \$32.4 million to \$34.2 million.

A similar story is told by most chemical process firms—but the textile, farm and antibiotic slumps took their toll:

 \bullet American Viscose estimates that its sales were off 2-3% from 1952, and profit before taxes will plummet about 30%.

• DDT-heavy Michigan Chemical suffered a sales drop—\$5.7 million vs. \$6.8 million, crossed the line from a \$258,319 profit in '52 to a \$140,053 loss last year.

• A Chloromycetin fall-off affected Parke, Davis. Sales dropped from \$126 million to \$110 million; net fell precipitously from \$16.3 million to \$9.3 million.

And up in Canada, Canadian Industries Ltd.'s sales rose 7% to \$153.6 million, but a slightly higher net (\$10.83 vs. \$10.75 million) resulted only from lower taxes.

Of equal interest is the note in the report that Du Pont and Imperial Chemical Industries will very shortly disclose their modified plan for segregation of their interests in CIL.

Du Pont and ICI have already pulled out of jointly owned firms in Argentina, Uruguay and Brazil. Here's the new set-up—as of late last week:

Duperial Brazil, in which ICI formerly shared major stock ownership with Du Pont, has transferred manufacturing facilities for leather cloth, silicates, and certain other products to Cia. Imperial do Industria Quimicas do Brasil, an ICI subsidiary. Duperial Brazil, which has changed its name to Du Pont do Brasil S.A.—Industrias Quimicas, retains manufacturing facilities for dynamite and chemical specialties, and will market Du Pont products in Brazil. ICI has withdrawn from any ownership in that company.

Duperial Argentina, in which Du Pont formerly shared major stock ownership with ICI, has transferred to Du Pont all its share in Ducilo S.A., manufacturers of nylon, rayon, and cellophane. In return, Du Pont has withdrawn from any ownership interest in Duperial Argentina. As a result, Du Pont no longer has any ownership interest in Duperial Uruguay, a subsidiary of Duperial Argentina.

While Du Pont will render technical sales service through its own employees in Argentina and Uruguay, it has appointed Compania Sud-Americana Kreglinger Ltda. S.A. as its distributor in Argentina for a number of Du Pont products, including industrial and agricultural chemicals, paints and finishes, dyes, commercial explosives, plastics and photo products. In Uruguay, Du Pont has appointed Mateo Brunet Soc. Anon. its distributor for photo products, insecticides, refrigerants, and

agricultural and other chemicals, and has appointed Kurt Mautner distributor for dyes and certain other products of the company's Organic Chemicals Department.

Tennessee Valley Authority's current policy—reflecting the resurgence of business as a policy-making voice in the Administration—is to work for a TVA-business partnership. This was made clear late last week

in a speech by TVA Board Chairman Gordon Clapp:

"How well and quickly the objectives to which the TVA is committed are achieved depends in large part upon the farmer and the fertilizer industry. If industry takes over a new process and supplies the demand for the new material, TVA facilities and efforts can be devoted to another promising process or product. Thus the success of TVA's program has depended heavily on the extent to which fertilizer manufacturers and distributors follow through beyond the points of research and demonstration where TVA stops. . . . The chemical plants at Muscle Shoals were not turned over to TVA to use as a weapon of waging price wars upon the fertilizer manufacturers."

Government-cum-business again: You can look for early action on the American Potash & Chemical Corp. case and other labor-management disputes concerning the industry now that the Senate has finally confirmed Eisenhower's appointment of Albert C. Beeson to fill the vacancy on the National Labor Relations Board.

About two dozen questions reportedly have been hanging fire, with the present board members dividing two-to-two along party lines. Now in position to cast a deciding vote in those cases Beeson brings to NLRB many years of experience in industrial relations work with Food

Machinery & Chemical Corp. and other companies.

Opposition to Beeson's appointment, based on his alleged promanagement viewpoint and on what Democratic senators called "contradictions" in Beeson's testimony, became progressively hotter right up to the last moment of bitter debate before the Senate voted for confirmation. Irascible John L. Lewis, president of the United Mine Workers, had denounced Beeson as "a self-styled union buster" in a telegram to senators.

Of industrial relations interest, too, is the failure of the Assn. of Professional Engineers, Chemists and Scientists to obtain certification as the collective bargaining agent for a hundred chemists and chemical engineers in Texaco's Laboratory Division, Port Arthur, Tex.

APECS appealed to the NLRB after the Texas Co. failed to recognize it, whereupon NLRB ordered an election. Results: 41 votes for APECS, 51 for no union.

The plastics industry is getting too complex. That's the reason why Hercules Powder Co. is withdrawing its John Wesley Hyatt Award to individuals for contributions to plastics advancement.

Citing the diversification of the industry, William Cruse, secretary of the Award Committee, points out, "The task of the judges in selecting a single individual . . . has become increasingly difficult. . . . The terms, conditions, and plans of the Award are being reappraised."

Straw in the wind: A bill introduced in the N. Y. State Legislature would require owners of public accommodations to advise patrons when water is fluoridated.

. . . The Editors



Celite's diatomite structure steps up performance

in paints-plastics-polishes...hundreds of other products

MICROSCOPIC PARTICLES of Celite* do a man-size job of stepping up performance for many of America's leading products. Here is how the unique structure of Celite Distomite Powders may add more beauty, longer life, greater efficiency to your products, too.

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BUSINESS & INDUSTRY

Profits Up, Sales Steady

Well-launched on a year slated by many economic Cassandras to be the "start of a long slide downward," chemical executives from coast to coast agree that the state of the chemical industry has rarely been healthier. Sales (on the whole) are up to 1953 standards; profits are higher; inventories are leveling off. Adequate capacity should hold prices down, put a damper on any speculative spree that might arise out of election-year political crossfiring.

"Heart of our present optimism," admits one chemical treasurer, "is clearly the long-awaited excess profits tax relief we're getting. We look for profits to total 10-15% above last year, don't expect significant price changes in basic chemicals since prices are quite realistic now."

"Elimination of excess profits tax," echoes a West Coast chemical president, "puts us in the enviable spot of expecting a 15-20% increase in retained earnings this year." Says another: "Increased capacity (we completed a five-year expansion program last year) coupled with the Eisenhower Administration's determination to stimulate business activity could drive profits up even higher than we currently anticipate."

"We're keeping an eye on Secretary Humphrey's tax program," ventures one small chemical company's president. "The tack the Republicans are taking (to cut taxes, increase business incentives) can make this a banner year for us."

Inventories Healthy: Inventories, on the whole, are in far better shape today than they were some months back, executives report. In the paint industry, for example, although industrial sales are lagging in the first two months of 1954 ("due to production drops in automobiles and appliances") trade sales have pushed business 10% ahead of 1953's rate. "That," points out one paint company president, "has resulted in a 10% inventory drop—just about where we'd like to be."

"Our customers (rubber chemicals, plastics)," states one sales manager, "seem to have reached the bottom of their inventories. They're pressuring for delivery tomorrow . . . but resistance among manufacturers is stiffen-

ing." Consensus: minimum inventories among many consumers may rise soon.

Vouches an insecticide company president: "In our industry we've faced the oversupply problem for two years now.... We've been all through price slashing. People are now waking up and taking corrective measures; inventories are now at a firm working level." Result: insecticide companies look for a 50% rise in profits over 1953 returns.

Capital Outlay Stable: Capital out-



HUMPHREY: Tax stimulants for business activity.

lay, in most sectors of the industry, will be off somewhat this year, but due more to the fact that '53 was a peak year in "building up capacity" than to any significant drop in expansion planning.

A typical basic chemical producer states: "It may look as though we're pulling in our horns on capital spending this year . . . but the truth is that our long-range expansion program is nearly completed." Or: "We're planning about the same amount of capital expenditures this year as last. It's the only way we can keep up with our competitors. . . ."

Midwestern accord: "Capital expenditures . . . in this sector of the chemical industry will average about the same as in the past few years . . . since much of it relates to a general modernization program . . . planned over a ten-year period."

Some manufacturers even predict capital expenditures are on the way up: "We're committed to build a \$5-million sulfuric acid plant this year . . . see no reason not to go ahead with plans." Or: "Our expenditures will be up. We're planning to spend more money improving quality to get a better competitive position."

A phosphate producer, on the other hand, predicts his company's outlay this year will be off considerably, explains it as "purely illusory . . . since last year's expenses were exceptionally high."

Prices Steady: Prices, chemical men predict, won't shift much this year. "Basic chemical prices look firm now," a major producer states; "agricultural chemicals should steady when demand strengthens."

A major factor holding prices up: raw materials and labor costs aren't due to change quickly. Further, a drop in the price of chemicals doesn't mean an immediate increase in volume as it does in the retail clothing business. With far greater diversification, chemical manufacturers can divert a certain amount of a product in oversupply into other channels, can tide themselves over temporary periods of softening markets.

There's very little fear extant today that gloomy economic forecasting will have much effect on chemical producers themselves. "All the political maneuvering means little," avers one specialties producer, "when your sales are as good as ours have been in recent months." The test will come instead with consumers. "People exposed to a steady diet of verbal 'Fear Dealing' in Washington . . . could eventually talk themselves into a recession . . . but we don't intend to lead them into it."

Or again: "Anybody in either party who's up for election will be either a gloom-baiter or a profit-booster, but it will have little direct impact on chemical men. We know business is good, and it's up to us to discount pessimistic economic forecasting."



HIGH DAM PROPONENTS: Davidson, Cooper like 602' dam, even at \$358 million.



IPC LAWYERS: Parry, Inman bid 'low.'

Phosphates and the Dam

They call it Hell's Canyon, where the boisterous Snake River hurtles northward between Idaho and Oregon mountain ranges; and this 50-mile gorge—deepest gash in the American continent, and nearly half a mile deeper than Arizona's more celebrated Grand Canyon—is currently at the center of the country's long-lasting struggle over national policy on development of our great natural resources.

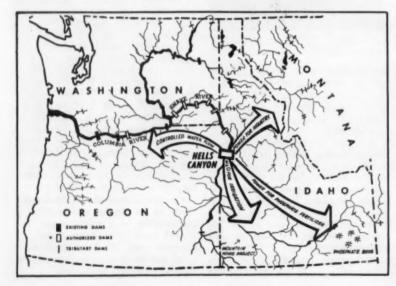
Here again—just as in the still-raging battle over the Tennessee Valley Authority—the chemical industry finds itself involved because of prospects of increased production of fertilizers and other chemicals. In Idaho and three surrounding states (Montana, Wyoming and Utah) are deposits containing an estimated 1.5 billion tons (37% of the U.S. total) of high-grade phosphate rock, about 6 billion tons (75% of the U.S. total) of fairly high-grade material, and even larger quantities of low-grade rock.

At issue: whether the potential hydroelectric power that could be wrung from this section of the Snake River should be produced and sold by the privately owned Idaho Power Co. at three relatively low dams, or by U.S. Dept. of the Interior at one high dam.

Power Puzzle: For companies interested in phosphate fertilizers and other phosphorous products, the question is this: Which plan would make more cheap power available for processing the phosphate rock?

That's one phase of the Hell's Canyon hassle now being argued in Washington before the Federal Power Commission. It has a prominent place in the debate because farm and labor groups in the Northwest and throughout the U.S.—with voting strength to be reckoned with—have been told that the high dam would make it economically feasible to convert phosphate rock into fertilizer by the electric arc furnace method, instead of by the "wet" or sulfuric acid process.

Electric furnaces already are in operation in the Western phosphate region, Westvaco having set up its first unit at Pocatello, Idaho, five years ago; but they are turning out elemental phosphorous for use in detergents, water conditioners, food additives, feed supplements and drugs-not for fertilizers. Chemical engineers generally figure that-under prevailing rates for electricity-making of wet-process phosphoric acid costs in the neighborhood of \$10/ton less than that derived from furnace-process phosphorous. But the Central Farmers Fertilizer Assn. of Seattle insists that if the high dam is built, electric furnace units in Idaho will be able to turn out higher phosphate concentrations at





FPC COUNSEL: Mason collects data.

Bargain Wanted: So far, evidence on this point doesn't seem to support that contention. If the Idaho phosphate producers could get large amounts of electric power at 2 or 2½ mills/kwh.—industrial rates offered at some public power projects in the Northwest—they might be able to make fertilizer at competitive prices via the furnace method, although shipping costs probably would restrict their market.

But best guesses on rates that would actually be charged for Hell's Canyon power indicate that this won't be another Bonneville bargain basement, no matter which plan the FPC ultimately approves. Chief Hydrologist J. R. Riter of the Bureau of Reclamation calculates that unit power costs at load centers would run 3.73 mills/kwh. for the high dam and about 3.99 mills/kwh. for the three-dam scheme. The high-dam rate is based on assumed federal financing—2.5% interest and 50-year amortization.

At present, Idaho Power is selling large blocks of power to Westvaco at 5-6 mills, depending on load factor; and Utah Power & Light, after building a new transmission line to serve the Monsanto facilities at Soda Springs, Idaho, is believed to be charging similar rates. These present producers and three farmer cooperatives, which have acquired phosphate rights to other southeast Idaho tracts and which have been negotiating with the two private power firms on rates, are keenly interested in prospects of cheaper power. They're waiting for

FPC staff experts to testify on this subject.

Decision by Xmas: Other issues abound in this controversy: public power vs private power, "creeping socialism" vs "Republican give-away," and flood control, irrigation, recreation and navigation side issues. FPC staff counsel John Mason is "emceeing" the hearings, with lawyers C. Girard Davidson and Evelyn Cooper holding forth for the pro-high dam Hell's Canyon Assn. while Pres. T. E. Roach, Vice-Pres. A. C. Inman and attorney R. P. Parry present the case for Idaho Power's low dams. Inman and Parry now have stated their case: the next few weeks will be given over to testimony from Interior Dept. and FPC staff witnesses. Then the highdam faction (whose leader is Leland Olds, former FPC chairman) will have its turn, possibly pushing the hearing into April.

FPC may take until December to decide, but is sure to o.k. one plan or another; the potential power—633,000 to 900,000 kw., depending on design—is pure gold. One pertinent point for interested parties is the time required for construction: three years for the low dams, five to eight years for the high dam.

Slackened Storing

Now well-stocked, the U.S. government has little urgency in its program for stockpiling of critical materials for industrial and defense use in case of emergency.

Though the country's goals for a few still-critical materials won't be met for another 10 years or so, the stockpile, over-all, now contains some 80% of the



GSA'S WALSH: No new money needed for continuation of stockpile buying.

\$7.1 billion worth of supplies that the government started out to acquire in the early years of the cold war. There's no definite target date for completing the program.

Figures on individual commodities in the stockpile are top secret, but a collective summation was reported this week by Commissioner A. J. Walsh of the General Service Administration's Emergency Procurement Service. Walsh says his agency may eventually need about \$1.5 billion in new appropriations to finish the purchasing project, but that no new money will be needed this coming fiscal year. From previous appropriations, CSA can lay hands on \$27.6 million to cover 1954 contract commitments and another \$301 million for new purchase agreements.

Fresh Spur Expansion

Chemical companies that have found applications for fast tax write-offs returned by the Office of Defense Mobilization "because the expansion goal has been filled," may soon get another cut at the ball. Reason: the ODM last week officially recognized a major shortcoming in its tax amortization program, admits it doesn't really know how close many goals are to completion.

The problem, as the industry knows well, is strictly one of accounting. ODM policy from the beginning has been to consider the granting of a tax write-off certificate, not actual ground-breaking for a new plant, as basis for totaling up expansion goals. Since many firms abandoned plans almost before they'd really taken shape (and never bothered to inform Washington of the shift in tack), other firms, eager to get accelerated tax amortization, were effectively blocked from having applications accepted. Further: the government's figures on capacity for particular commodities were far from correct.

Disturbed by its position, ODM is now checking for the first time on all certified expansion projects to determine the state of plant construction. When the tabs are all in, it could well signal a reopening of many closed and open-end goals, represent a fresh chance for application by many firms currently contemplating expansion.

Petering Out: In effect, the big checkup job may be a final effort for ODM. During recent weeks 27 applications have been received, 27 accepted. Of 242 formal goals established, only 90 industries are still eligible for accelerated tax write-off. And even in these, the unsubscribed expansion on the books is not large.

Further, in a recent report, ODM shows that expansion projects set up under the fast amortization program are starting to reach completion with a rush. At the close of '53, the cumulative value of projects in place (for all industries) stood at \$20.2 billion. That represents 73.5% of the \$27.6 billion worth of facilities certified under the program as of Sept. 30, '53. Value of completed projects on Sept. 30 (12,237 in number) was \$8.7 billion; at the start of 1954, the total had jumped to \$14.3 billion.

This year an additional \$10.2 billion is slated for completion; in 1955 about \$2 billion. (Omitted from these figures are the \$1.6 billion worth of facilities certified since last Sept. 30.)

Opening up expansion goals may not have too much immediate effect on producers in all fields however. Just last week, ODM restored 17 expansion goals, but except in the case of ammonia the action probably won't stir much excitement. (Previously & ammonia producers had applied for fast tax write-offs on new plants, had been turned down because the goal was suspended.)

But ODM isn't discouraged. As soon as its tabulations begin to come in, it plans to list expired certificates along with official releases of certificates issued. Theoretically the idea will interest companies contemplating expansion to reapply for write-offs, indirectly build up capital expenditures in the U.S. this year.

COMPANIES

The Atomic Energy Commission is now permitting most uranium mining companies to disclose information regarding ore production, available reserves. Omitted from the general relaxation: companies operating milling facilities. Reason for the switch: the desire (by AEC) to enable private industry to interest potential investors.

Stock purchases, redemptions, sales:

• Union Carbide and Carbon Corp. has made an offer to purchase all capital stock of the Kanawha Land Co., Charleston, W. Va., in order to obtain acreage adjacent to its Naval Ordnance Plant for possible expansion. Cost to Carbide: \$210,000.

 Spencer Chemical Co. has called in all its outstanding 4.50% second convertible preferred stock for conversion to common stock. This amounts to a third call for this class of stock made in recent months, should be effected quickly since Spencer common stock today is selling above the call price on preferred.

· Reichhold Chemicals, Inc., has

privately sold \$1.1 million of 4½% preferred stock. The move brings the firm's total amount of preferred stock to \$2 million, will provide funds for additional expansion of facilities at Tuscaloosa, Ala., and Ballardvale, Mass., in addition to facilities for production of the formaldehyde and pentaerythritol.

Columbia Naval Stores Co., Savannah, Ga., is completing negotiations with Peninsular-Lurton Co., Jacksonville, Fla., preparatory to the formation of the Southern Gum Processing Co., which was designed to own and operate the seven processing plants of both parent companies. The move is necessitated by decreasing sales, increasing operating costs. Effective date (if approved by stockholders): March 1.

Consolidated Chemical Industries, Inc., has taken down a final \$3 million under a \$10-million agreement (Feb. 26, 1953) with four insurance companies. Proceeds will be used for the construction of plants in Baytown and Houston, Tex.

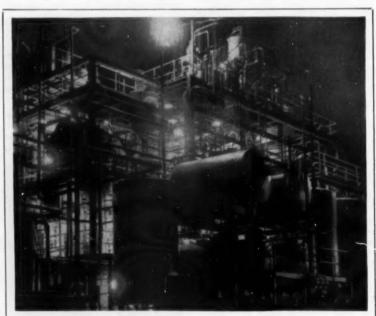
EXPANSION.

Aluminum: Aluminum Co. of America has completed a 33% increase in capacity at its Mobile Alumina Works, will make available sufficient alumina to produce over 100,000 tons/year of aluminum.

Synthetic Rubber: Seiberling Rubber Co., Akron, expects to join in the bidding on the synthetic rubber plants to be sold by this government this year.

Due for expansion: Seiberling's new plastics division at Newcomerstown, its tire plant at Columbia. Earnings for 1953 were "slightly above 1952 figures": profits for 1954 "should be about the same as last year."

Ethylene: Gulf Oil Corp. will build a new ethylene plant at its Port Arthur, Tex., refinery. Capacity: 3 billion cubic ft. of ethylene/year... a 10% increase in the nation's output. Also due for construction: a new platforming unit, designed to improve the company's high-octane motor gas with a capacity of 29,000 bbls./day.



Accent on Export

PEST CONTROL, LTD., Cambridge, England, is starting production of 2-methyl-4-chlorophenoxyacetic acid this week with an eye to a major drive on world markets.

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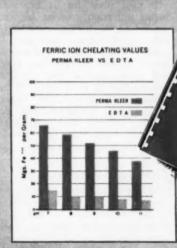
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MOA BAY: Freeport deposits in Cuba . . . 40 million tons of nickel ore.

Switching Signals Again?

One more step in the international nickel chess game took place last week when Nicaro Nickel Co. (a subsidiary of Freeport Sulphur Corp.) sought—and obtained—an accelerated tax write-off for construction of facilities at Moa Bay, Cuba, and New Orleans, La. Cost: \$55.2 million—80% of which would be eligible for fast amortization.

The move contrasts sharply with the government's stand just a few weeks ago (CW, Jan. 23)—when the General Services Administration firmly endorsed its own ammonia-leaching plant at Nicaro, decided to gamble an additional \$43 million on expansion of presently used processes.

Freeport officials are determined not to be stampeded into any abortive major construction plans now. Still seeking private financing (and regardless of any commitments), they'll be content to run a 5-ton/day pilot plant at Hoskins Mound, Tex., until adequate information can be gained to insure successful design of sulfuric acid leaching process facilities.

Always a Possibility: GSA still hopes to persuade Freeport to construct a 50-ton/day pilot plant in the U.S. "so that the process can be tested under conditions more nearly approximating actual production." One major point of difference, however, may impede the negotiations: Freeport would require a government purchase contract for commercially produced nickel; the government sees

in the agreement the possibility of selling short its own investment (some \$87 million) in Cuba.

Quietly in the background, Bethlehem Steel Corp. (which had been negotiating with the GSA for a cash advance to construct a semicommercial pilot plant for its nitric acid nickel extraction process) has come around to the government's way of thinking. Bethlehem has now discarded nitric acid in favor of ammonia as an ore-leaching medium, says it will use a modification of the Caron process that is used at the Nicaro, Cuba, plant operated by National Lead Co. for the government, plans to keep its own nitric acid process "on ice" temporarily until developments shape up more clearly.

Due to Boomerang?

The tide of European scientific manpower is still flowing in the direction of the U.S. according to latest government figures—but there's a growing conviction in the chemical industry that when it ebbs chemical producers may find themselves on the short (rather than the long) end of the stick.

Equally responsible for encouraging the import of chemists: U.S. chemical firms (CW, Feb. 7, '53) seeking to alleviate technical manpower shortages; American universities, trying to offset the financial pangs of decreasing enrollments; and the Foreign

Operations Administration, hoping to increase the competitive position of various foreign countries in scientific progress.

A large majority of graduate chemical, engineering schools in the U.S. today report that less than one-third of all research assistants are Americans; the balance—from foreign countries—are here on "temporary assignments," often with funds granted for special projects by leading American research foundations.

Adding to the general flood: a recent FOA project, voting funds to bring 150 foreign students at post-PhD level to the U.S. One stipulation in the program, says Administrator Stassen, is that the recipients of the fellowships "must return home after their assignments are completed... since a basic factor of the government's interest in fostering the plan



STASSEN: Gets an enthusiastic cheer from foreign chemical manufacturers.

is to raise the level of technical know-how abroad."

More than slightly disturbed by the prospect of mounting dependence upon European scientific brainpower are various American chemical firms, who warn that "too great a reliance may someday boomerang in the faces of those eagerly supporting it today."

"Importing scientists," one chemical manufacturer points out, "is in no way comparable to sponsoring work done in Europe and Asia by foreign-staffed research groups." In the former case, you're tinkering with the balance in basic know-how and technical research on a worldwide scale, while in the latter "it's just a question of expediency . . . brought on in part by the U.S. military draft requirements.



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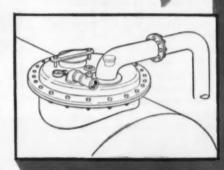
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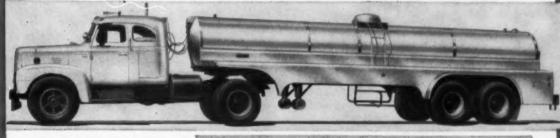
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Employees into Pals-Via Frank Finesse

Who's winning the tug-of-war over the employer-loyalty of the American chemical worker?

Judging by latest Labor Dept. figures on labor turnover in this industry, U.S. chemical companies appear to be doing a well-above-average job of turning their employees into friends and boosters; and this in turn speaks well of the chemical concerns' "internal house organs." These papers and magazines constitute a vital pipeline to the worker's heart and mind, cost from 5¢ to \$1.25 a copy to produce, and can be worth thousands of dollars in morale and service.

Pulling in another direction are the labor union publications that go out to chemical workers; these will be scanned in a forthcoming CW issue. Under the magnifying glass this week are the company periodicals, ranging from a few mimeographed pages to 80-page, slick-paper magazines.

Multipurpose Papers: Presence or

absence of excess profits tax can make a sizable difference in house organ budgets, but even in boom times a company doesn't spend the large sums required for a first-class magazine unless management is convinced that there's a lot to be accomplished thereby.

Objectives of employee magazines, accordingly, are many-fold. A good internal house organ can:

 Develop company pride and loyalty among the employees.

 Build team spirit and help employees understand how the various departments and divisions work together.

 Prevent misunderstandings that would make for workers' discontent.

 Help employees to see "the company side" of economic and political problems.

Underlying all of these special goals, of course, is the basic purpose of any journalistic endeavor: to keep the members of a group or community informed about latest developments and future events of interest and importance to those people. In the case of large companies with big, widely separated plants, it takes more than one publication to do the job; Union Carbide and Carbon, for example, prints some 38 magazines and papers for employees of its divisions and plants.

Answer to Unions: Chemical companies, relying to a considerable extent on highly trained workmen operating expensive equipment, have a big stake in employees' enthusiasm. For this reason, it's particularly important that chemical firms' house organs get the "company side" to employees. The object here is to show the worker that the company is treating him fairly, and that he has opportunity for security and progress in the company.

One recent effort along that line





COMPANY EDITORS: At left, Hercules' James Anderson; right, Monsanto's Richard Stockwell, Russ Chappell, Paul Haney.

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BUSINESS & INDUSTRY .

was an article in the Hercules Mixer, headed by this "help wanted ad": "EXCELLENT opportunities for employment with topnotch chemical company. Must be prepared to furnish own tools, equipment and materials requiring investment of approximately \$24,000. Reply to Box 53." The article then pointed out that Hercules has that much capital invested for each of its employees, providing jobs for workers as well as dividends for investors.

A similar aim is seen in "The Wage Earner," an illustrated article in the current issue of Du Pont's Better Licing. It calls attention to the 59% increase in Du Pont wages from 1946 to 1953, and shows how a certain employee—"typical of the men in the industry who shared the fruits of its progress"—prospered in 1953.

Craftsmanship and Color: In this era of television, 3-D movies and a multiplicity of general-interest and union magazines, it's no simple task to get an employee to read the "company story," which frequently runs toward drab statistics and well-worn proverbs. How do you catch your employee's eye, and make him see management's side?

This is where skilled and talented editors, photographers and layout men step into the scene. With attractive typography (often involving costly color combinations) and with stories and illustrations that have direct appeal, they lead their readers into articles that inform, educate and persuade-but painlessly. The caliber of the work has to be high, to enhance the company's prestige with its own personnel and to add impact to the company's message. If the house or-gan looks "sloppy," the employee is likely to glance at the pictures and personal news items, then discard the company magazine and pick up Life or Collier's. It's no wonder that chemical companies look for journalists with backgrounds like that of Monsanto's Richard Stockwell, winner of a 1946 Neiman Fellowship, who had 13 years' experience in radio, newspapers and business news magazines before he became editor of Monsanto Magazine in 1952.

Considering the effect that worker attitude—as reflected in productivity, strikes and job turnover—can have on a company's economic health, there's importance in what its employees are reading. If "company thinking" is to get through to employees, it must be soundly and frankly presented—and with finesse. That's why chemical companies rate house organs as serious business.

Double Dilemma

Trying to pull the Japanese chemical industry out of a deepening economic morass is at best a sticky problem for State and Commerce Dept. officials. Trade barriers on the one hand bar any immediate relief through sales in the U.S.; United Nations (and indirectly, official U.S.) policy blocks wholesale lifting of trade restrictions with Red China.

Estimating Japan's trade deficit last year (in all commodities) at \$1.1 billion, Japanese businessmen are frankly worried, say they'll clutch at any chance to get rid of mounting stockpiles of chemicals "at a reasonable loss."



ROBERTSON: "Japan's trade is in an alarming state . . . due to get worse."

Adding to the general muddle: recent agitation by U.S. pulpwood manufacturers—alarmed by Japanese threats to establish lumber and pulp mills in Alaska. Though they admit that Japan's rayon industry is up against the wall, can't get logs from Manchuria or Sakhalin Island because of trade barriers, they just as positively "don't want competition from Japan in our own backyard."

"One way out for the Japanese," says Assistant Secy. of State Walter S. Robertson, "is to form a U.S. company (as has been done by 80 Japanese firms under the name of Alaska Pulp & Lumber Co.) to bid for Alaskan contracts and licenses."

But from any angle, such maneuvering won't solve Japan's basic problem—a lack of markets for her growing chemical industry. It may mean major compromises on both sides in the months ahead, if the U.S. is to come up with an answer to the dilemma.



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HERCULES







PATINO: A lever on tin prices?

One More Problem for RFC

Last spring when the Administration was working up plans to pull out of the synthetic rubber industry, it was openly harboring similar intentions regarding the tin industry. But by this week-unlike the case of synthetic rubber producers (CW, Feb. 20), who proved anxious to buy facilities outright-there aren't yet any American companies knocking on the door, eager to buy the big governmentowned tin smelter at Texas City, Tex. Result: the plant will probably be mothballed later this year, Bolivia (which has become increasingly dependent on the U.S. smelter) will suffer accordingly.

For almost 14 years, the Texas City smelter has been in operation as the world's biggest tin plant. During wartime shortages it produced metal for military use, during normal years for the national stockpile. But with world supplies more than adequate to meet current needs and the stockpile brimming over with a 40,000-ton surplus, the Eisenhower Administration can find little reason to keep the high-cost smelter in operation any longer.

Major problem in sale is that the smelter can probably not be run profitably as a private operation. It's specifically designed to extract tin from Bolivia's low-grade ore-mainly from the now-nationalized Bolivian government-owned mines. With Texas City out of operation, the only remaining tin smelter able to handle the job is in Liverpool (Patino-owned) - and independent producers fear that with such a powerful lever on tin prices, Antenor Patino will exercise a heavy

hand on world supplies.

As an alternate plan the Bolivians would like to see the Texas City smelter continued in operation for "just a year or two more." By that time they expect to be well along the road to diversifying their economymainly by expansion in oil-"and the blow would not be so heavy to bear. Since 85% of the Bolivian government's revenue last year (and some 55% of the nation's income) was derived from tin production, such a plan appeals to interested United Nations observers, impressed by a need for some sort of compromising tactics. In Bolivia, strictly in an advisory capacity, the official U.N. technical mission agrees that delay "is the best way out.'

But U.S. government officials are more attracted to a proposal by a Boston venture capital organization-New Enterprises, Inc. Eugene Hotchkiss, vice-president figures that a com-mercial smelter with capacity to process 100 tons of concentrates daily can be built in Bolivia for just under \$2 million. While the low-temperature hydrogen reduction process would only produce 95% (not pure) tin, the move would temporarily relieve Bolivia's predicament. And later, he feels, plant could be expanded for about \$1 million to produce tin electrolytically.

Which way the Bolivians will turn remains to be decided, but Washington officials, refusing to be stampeded into backtracking, have asked Congress for \$600,000 to close down the U.S. Texas City smelter before the

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LABOR

GAW Alternative: Chemical company industrial relations men at last week's personnel conference in Chicago heard conflicting advice about the role of government in this field. Sen. Wallace Bennett (R., Utah) urges labor and management to iron out their difficulties on a personal basis, without mass methods and without government intervention. He visualizes a "phantom factory" in which employees could find satisfaction for their creative and teamwork desires, decries the "mass" idea by which "so-called masterminds hand out benefits" that don't fit the workers' personal needs. Prof. Sumner Slichter, on the other hand, suggests reliance on state government for



UTAH'S BENNETT: To eliminate clashing interests, a "phantom factory."

some functions in industrial relations. In particular, he proposes that business should back more liberal state unemployment compensation programs as better than the guaranteed annual wage.

Fraternal Friction: At least one of the 11 members on the executive board of the International Chemical Workers Union (AFL) is seeking the ouster of that union's long-time president, Herbert A. Bradley. This internal dissension, which could seriously affect the union's organizing and bargaining strength, has come into the open while Bradley is confined to an Akron hospital with an ailment described as a virus infection. Bradley, a grizzled veteran of many years of union battles, attended the latest board meeting (Jan. 15), was admitted two days later to the hospital where he had

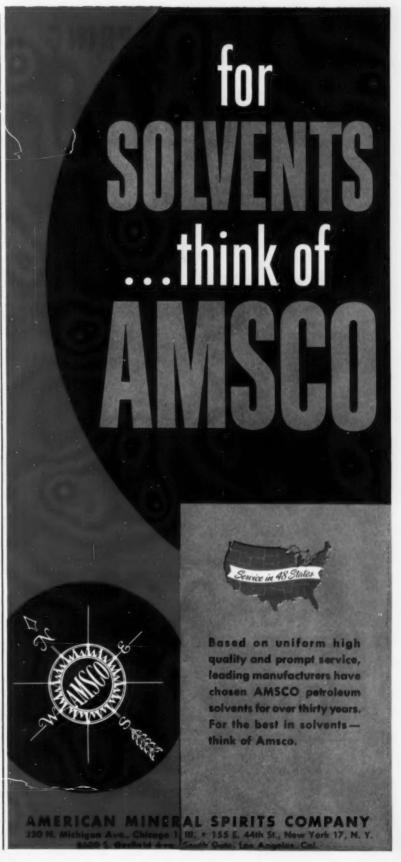
sojourned last fall after a heart attack. The board's next scheduled meeting, March 23, will give Bradley's foe—who holds that growth of the union will be in jeopardy unless Bradley is replaced—a chance for a showdown. Another chance to settle the differences will come in August at the union's 11th annual convention, to be held in Chicago. During Bradley's illness last autumn, the board installed as acting president Edward Moffett, Houston, ICWU's first vice-president.

Merging Party: Though invited, no chemical unions were among the 31 labor unions represented at last week's assembly of 170 delegates who came to Philadelphia to explore the possibility of merging their small and medium-size groups into one big union for the oil and allied industries. Chemical unions had been invited to send delegates, owing to the increasing production of chemicals from petroleum and natural gas. Goal of the unification-minded delegates at the parley was industrywide bargaining, as in the steel and coal mining industries.

War of Secession: Extent of allegedly Communistic influence over chemical industry employees has been trimmed again, this time as the result of a "secession" that has been upheld in the courts. When Delaware plasticworker members of Local 144, United Electrical Workers of America (Ind.), pulled out of that left-wing union last year, UE Pres. Albert Fitzgerald and the international union brought suit to enjoin that move and to keep the local treasury under UE control. Some days ago, the chancery court in Wilmington, Del., decided to dismiss the action, leaving the Wilmington unionists free to carry on their collective bargaining work through their newly formed Fiber & Plastic Workers Union.

LEGAL. .

Texas Trepidations: Ever since the U.S. Supreme Court struck down the Texas state tax on gathering of natural gas, businessmen in that state have been wondering where the legislature will turn to make up for the loss in revenue. While the state attorney-general favors boosting the tax on natural gas production—part of which tax would be passed on to chemical and other big industrial consumers—some officials are looking in other directions. It appears that there'll be no increase in the omnibus tax on sul-



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fur and other products, but there's interest in the fact that "many other Texas industries are not subjected to any state tax."

Justice Tom Clark, a Texan himself, wrote the Supreme Court opinion holding the gas gathering tax unconstitutional. Clark wrote that the flow of natural gas through interstate pipelines must be viewed as an unbroken process, subject to federal and not state regulation. He reasons that if Texas were allowed to tax the gas as



HIGH COURT'S CLARK: Interstate gas flow unbroken, untaxable.

it starts flowing north, then Oklahoma and other states could apply similar taxes along the way.

Happy Solution: Colgate-Palmolive Co. now can go ahead with construction of an office building and a parking lot at Louisville, Ky., across the Ohio River from its big plant at Jeffersonville, Ind. This move was barred by a circuit court ruling against a Louisville city ordinance rezoning the property; but the state court of appeals reversed that decision, giving Colgate's contractors the green light.

Favorite Target: In Pennsylvania, Missouri and California this week, chemical companies are on the defensive in civil damage suits:

• Biggest of these lawsuits was against Hercules Powder Co. by attorney Cyril Appel, representing 22 employees who were injured and 29 surviving dependents of 12 employees who were killed in last year's explosion and fire in the Hercules plant at Pinole, Calif. These plaintiffs are asking the company for \$1,925,000, which Appel said is probably the largest single claim for damages ever

B&I.

filed in northern California. Hercules, which has a \$514,793 suit pending against Automatic Sprinkler Corp., for alleged failure of the plant's sprinkling system, says it paid the burial expenses and death benefits of the employees who were killed, medical expenses for injured employees, and property damage claims of more than 350 persons living near the plant. The company also has spent \$179,712 in plant reconstruction.

• At Joplin, Mo., Thomas Nelson is asking the state circuit court to order Thurston Chemical Co. to pay him \$200,201 as compensation for personal injuries, probable future medical expenses, losses in earnings, and damage to his tractor. Nelson asserts that a "dense, pungent fog" from Thurston's fertilizer plant caused him to drive his tractor into a stalled auto.

• A woman who worked at the Atlas Powder Co. plant at Reynolds, Pa., as an ordnance inspector for the U.S. Navy is suing Atlas for \$200,000 for injuries she received in an explosion at the plant. The plaintiff, Marian Posta, filed the action in a state court at Scranton.

FOREIGN.

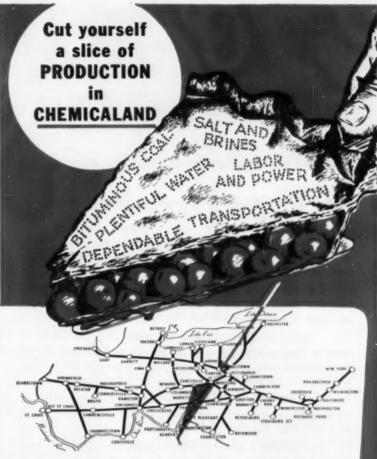
Fertilizer/Brazil: Using equipment purchased in the U.S. and Europe, the Cubatao oil refinery, outside Santos, hopes to get its new nitrogenous fertilizer plant in operation late next month. It is being touted as "first of its kind in Brazil," is expected to cut Brazilian imports of fertilizers considerably this year.

Imports/France: The Journal Officiel is advising French importers this week of the opening of credits for the purchase of equipment in the U.S. The credits are earmarked exclusively for the import of equipment for metal processing, packing machines, materials for the chemical and food industries.

Glycerine/Japan: Japanese soap manufacturers are negotiating the export of 300 tons of glycerine to Spain according to the Japan Soap Manufacturers Assn. Reason: growing stocks of glycerine at soap plants in the Islands.

Plastics/Germany: West German production of plastics last year totaled 240,000 tons—an increase of more than 25% over 1952.

Ammonia/Canada: The Fluor Corp., Ltd., Canada, has the contract for engineering and construction work on



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Dow Chemical of Canada's ammonia expansion project at Sarnia.

Furfural/Italy: The Gioia Tauro Co., Italy, is building a large furfural plant in North Italy designed to "more than double" present production of five presently operating plants in Italy. Cost: \$1.5 million.

Exports/Japan: The Japanese chemical industry, in cooperation with the government, has decided to set up basic chemical facilities in India to get a better edge in world export markets. First step: an 18-man commission (now in New Delhi) will attempt to thrash out with India's Minister of Health specifically what pharmaceuticals and chemicals can best meet Far Eastern requirements. Temporary purchase agreements for stockpiled Japanese antibiotics may be forthcoming soon, industry spokesmen say.

KEY CHANGES. .

V. E. Wellman, to manager, petrochemicals, intermediates, and rubber chemicals departments, American Cyanamid Co., Bound Brook, N. J.

John R. Ryan, to manager, explosives department, Hercules Powder Co., Wilmington.

Raymond B. Seymour, to president, Atlas Mineral Products Co., Mertztown, Pa.

Frank P. Sanders, to manager, Chemical Div., Mud Products, Inc., Tulsa,

James E. Rundell, to director of research and development, Hoffman-Taff, Inc., Springfield, Mo.

P. C. Goodspeed, Jr., to sales manager, Sheffield Chemical Co., Inc. New York.

Dan J. Keating, to director of sales, Agricultural Chemicals Div., Stauffer Chemical Co., New York.

Martin Buck, to assistant to vice-president in charge of manufacturing, Shell Chemical Corp., New York.

Robert L. Lippe, to vice-president, Nod Hill Chemical Corp., Brooklyn, N. Y.

DIED. . . .

Charles Lathrep Parsons, 86, educator (University of New Hampshire), chemist (chief chemist, Bureau of Mines), and former secretary of the American Chemical Society, in Pocasset, Mass.

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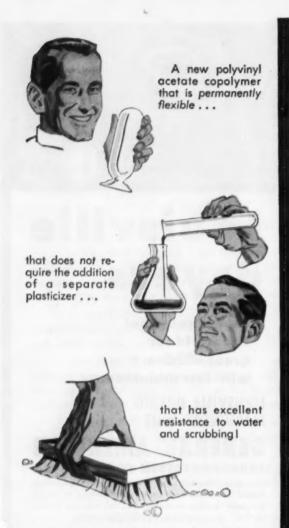


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BULLETIN:

Emulsion paints, particularly those based on synthetic latices of the styrene-butadiene type, have revolutionized the paint industry. They are conceded to have many advantages—speed of drying, ease of application, lack of objectionable odor, etc. However, they have a trouble-some disadvantage. They tend to discolor and become brittle with age, because styrene-butadiene copolymers are susceptible to oxygen attack.

Emulsion paints based on polyvinyl acetate copolymers do not have this susceptibility to oxygen; therefore they have excellent stability. They also have superior adhesive properties. However, until now, polyvinyl acetates also have had disadvantages. Until now, it has been difficult to obtain sufficient water resistance with them. Until now, an additional compounding step has been necessary — that of plasticizing these emulsions with a separate chemical plasticizer.

Now Dewey and Almy, with the development of Everflex G, makes available to the emulsion paint manufacturer a polyvinyl acetate copolymer with all the inherent advantages of the styrene-butadiene latices but which is not susceptible to oxidation... which does not require plasticizer addition. There is no separate plasticizer to migrate or be lost on long exposure.



Paints based on Everflex G have excellent water and scrub resistance. They are permanently flexible. They have superior adhesive properties. They have high oil resistance. Everflex G not only overcomes many of the disadvantages of present day water base paint for interior uses, it extends the application of such paints to exterior use on masonry. Even the exterior painting of wooden structures is a distinct possibility! Several wooden test buildings and homes have been painted with an exterior emulsion paint based on Everflex G, and early indications show great promise.

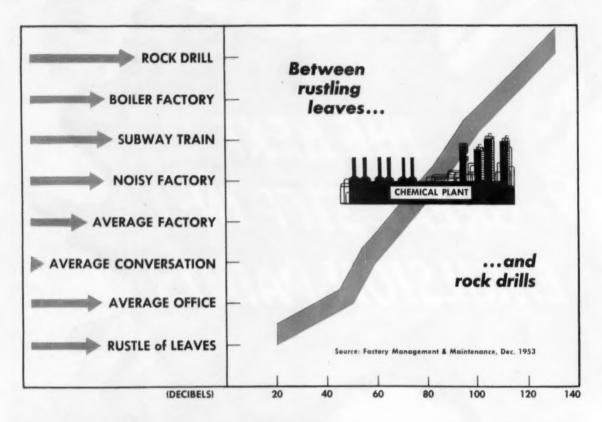
Everflex G is now being produced in commercial quantities. Inquiries from paint manufacturers are invited. Write or phone any of the addresses at right or R. T. Vanderbilt Co., who markets this product to the paint industry as "NORVAN G".

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Pitched for the Inner Ear

For the first time in the history of compensation, noise poses a serious industrial problem as New York and Wisconsin courts award benefits for hearing loss.

New York's Workmen's Compensation Board and similar groups are currently beefing up compensation guideposts, could make industry vulnerable to more than a billion dollars in claims.

Although most chemical men remain unaware of noise problems, the chemical process industries are beset with some of the noisiest operations in industry.

Noise means different things to different people. To the railroad engineer, it is something he has to live with; to the sound engineer, its elimination is Lis business, and business is getting better every day.

In the big picture, industry is speeding up its machines faster than before, using more machines than ever, and, consequently, becoming noisier by the revolution. Contributing in no small measure to this growing cacophony, the chemical process industries possess some of the noisiest machines and working areas on the decibel scale (see graph above; table, p. 40).

Anvil Chorus: Paralleling this mounting uproar is a growing concern for its effect on the safety of workers. Noise, if frequent and high enough, causes deafness, not—as many might believe—by damaging the ear drum, which generally will heal, but by permanently and irreparably fatiguing the hair cells of the inner ear.

Noise, however, can prove a major disability long before deafness occurs. In any hazardous operation, it constitutes a very real danger by dinning out voices and warning buzzers. Too, noise can often irritate personnel, ruffle their calm, lower their morale,

and, it is felt, impair their efficiency. Outside of the plant, public and community relations also suffer; noisy firms alienate nonindustrial neighbors, leave a bad taste with plant visitors.

Paying the Piper: But the paucity of actual proof concerning noise-lowered efficiency blunts the noise engineer's approach to management. Most methods aimed at noise reduction cost high, and without tangible evidence of benefits, most management men hesitate to loosen their purse strings.

But the other horn of the dilemma—gathering such evidence—also proves an expensive proposition. Although noise studies have been in progress for more than 15 years, only a few organizations are able to carry out comprehensive investigations. Among those is Mellon Institute's Industrial Hygiene Foundation of America (Pittsburgh). Currently in search of funds for new noise studies, IHF's Managing Director Richard Walmer declares industry is dragging its feet, that the chemical segment especially seems overcome with inertia.

And, continues Walmer, this inertia

could soon shackle industry with more than a billion dollars* in compensation claims. New York and Wisconsin courts are now exposing companies to deafness claims even though there has been no time lost because of the disability.

Charge for Comfort: Regardless of cost or proof of impaired efficiency, other groups feel that personnel safety and morale are of paramount importance now, are taking the lead in making sound studies and corrections. Among those showing the most active interest:

- Du Pont has been carrying out sound studies for a number of years under the aegis of its engineering and medical divisions. The engineering division has compiled one report titled "Noise in Industry," while the medical division has covered the subject at its annual meetings. A group of those working on the problem is currently convening, may soon come up with some answers. However, says Du Pont, much is still in the realm of opinion, and many of the fundamental answers are yet to be found.
 - Eastman Kodak's James Sterner
- * Another estimate made by Henry Sayer, general manager of New York Compensation Insurance Rating Board, placed the potential cost of such claims at billions of dollars for New York state area alone.

A survey of chemical plants, with few exceptions, shows that . . .

- 48% of plant managers are doing nothing about noise, are unaware of any problem.
- 32% of plant managers are conscious of noise problem, are doing or plan to do something about it.
- 10% of plant managers are aware of the problem, but think it would cost too much to do anything about it.
- 10% of plant managers are unaware of specific problems; they're interested, but uncertain as to any future action.

also has been following the noise trail, but he's concentrating on the nonchemical segments of the company, where the problem is more acute.

• Armour Research Foundation, directed by acoustic expert H. A. Leedy,

is still working on the noise problem after 17 years, has expanded its acoustics group to 20 people. Having published a number of papers on the subject, Armour feels it's time the chemical industry awoke to this prob-

NOISE ABATEMENT

This is what to check:

- / machines against established noise-rating charts.
- machines and equipment that emit steady, frequent single or repeated impacts, or friction noises such as the hiss of steam escaping from boilers, buzz of power saws, the bang of drop hammers, the fat-fat-tat of pneumatic hammers, or the grate of sandpapering.
- areas in which it is impossible to carry on a conversation at arms length.
- areas in which there is a great deal of operating equipment.
- areas in which there are large radiating, resonating or reflecting surfaces.

This is what can be done:

- insulate walls and ceilings with acoustical panels.
- provide workers with ear protectors.
- properly maintain equipment through lubrication and replacement of worn parts.
- enclose or otherwise isolate noisy equipment.
- plan layouts of new plants so as to segregate noisy machines or areas.
- buy new and quieter equipment.
- install vibration isolators and mufflers.
- build stronger foundations for noisy machines.
- select a less noisy afternate process.
- use highly absorbent construction materials in building or remodeling plants.
- consult sound engineers on specific problems and new developments in the field.



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Rotary kilns, heavy chemicals 9	Rotary kiln 95
Mixer, heavy chemicals 10	Mixer, enamel components 83
Enamel mixing	6 Hammermill 104
Plastic molding	1 Compounding roll, plastic components 94
conveyor 9	4 Five-roll mill
Catalytic cracking, petroleum 10	5 Rewind, fabric beaming 93

* 100 decibels is the approximate noise level of a subway train passing through

Source: Industrial Hygiene Quarterly, Dec. '53.

lem it will soon have to face.

· Workmen's Compensation Board of New York last December set a precedent when it adopted a set of standards to guide it in settling claims arising from deafness caused by industrial noise. The board, however, recently retracted these standards, currently has them under consideration and will shortly reissue them in revised or original form.

· American Standards Assn. recently carried out a study sponsored by the Acoustical Society of America on "The Relations of Hearing Loss to Noise Exposure," published its findings late last month.

Earlier, American Standards Assn. and Acoustical Society of America study groups came up with a set of standards for sound testing equipment.

· Industrial Hygiene Foundation, interested in the problem for years, does some studies in the field, compiles, correlates and makes results of other studies available to its 370 members. Goals for this year: a study and analysis of current legislation concerned with industrially caused loss of hearing; lectures to executives interested in the problem; an annotated

bibliography of available literature on

• The Armed Services, American Academy of Ophthalmology and Otolaryngology, Manufacturing Chemists Assn., Western Electric, American Airlines, Allis-Chalmers, General Electric and Radio Corp. of America are actively interested, are carrying out programs on specialized aspects of the noise problem.

· CIO and AFL union officials are studying the problem, may push for enabling legislation in those states that lack laws on industrial deafness.

Facing the Inevitable: That the problem of noise will soon have to be faced by all industries is taken for granted by those who have looked into the problem. For most chemical men (see box, survey) this means first of all an awakening to the problem, an awareness of the noise ratings inherent in certain of their machines and processing areas, and, finally, formulation of some noise abatement program (see box, noise abatement). While the cost of prevention could come high, as pointed out by Walmer and Sayer, the cost of negligence could be staggering.

Limelight on Lignite

When Aluminum Co. of America revealed that it would use lignite (rather than natural gas) for its smelting plant near Rockdale, Tex. (CW, Aug. 18, '51), prideful Texans considered it practically a cause for deportation. And chemical engineers went scurrying to their slide rules to revise or confirm their estimates of lignite both as a fuel and as a chemical raw material. For Rockdale is deep in the heart of natural gas territory. Here's the latest word on the project from Alcoa and from the Bureau of Mines' V. F. Parry.°

The power facilities are being built by the Texas Power and Light Co., will be operated for Alcoa by the Industrial Generating Co. The first boiler and turbo-generator unit (of the scheduled three) was put through a test run several weeks ago. And as soon as the lignite equipment is aligned and fully tested, says Alcoa, the first unit will be put in commercial operation.

The idea, however, is to convert the lignite into a solid fuel (char) and a liquid (tar), which can be used as a fuel or as a chemical feedstock. And Alcoa is the first to admit that it will be some time before the first experimental carbonizer will be ready to extract the tars from lignite.

The process of drying and carbonizing the lignite in the entrained state were developed by the Bureau of Mines in cooperation with the Texas Power & Light Co. Here's how the operation will work, says the bureau's Parry:

Lignite will be extracted within a few miles of the Rockdale plant, and conveyed to the plant on a continuous belt. There it will be crushed in hammer mills and stored in concrete silos. From the silos, it will either be dried and sent directly to the boilers or dried and carbonized for separation of the tar and char. The fuel handling system at Rockdale is arranged so that it can use either dried or carbonized lignite at the burners.

A prototype carbonizing unit has been designed. In it, process air is first compressed to about 8 psig., goes through a recuperator where it's preheated to 700 F. Part of the preheated air is diverted back to the drier to move the dried lignite to the reactor; the rest is sent straight to the base of the reactor. Air and coal enter through the bottom of the reactor, move up

through it entrained in the products of combustion.

Combustion air (at about 600 F) is drawn into the system through a fan (which also circulates a portion of the products of combustion from the furnace). It's forced through a combustion air preheater where the temperature is elevated to about 1,200 F, and is then sent to the furnace ports.

Char is collected and can be conveyed pneumatically right to the boiler. The prototype carbonizer, a hot electrostatic precipitator and an experimental tar-condensing system, says Parry, will be operated several months to prove the design and engineering features as well as to provide tar for research and market studies.

Economic Question: At the crux of the situation is the question of what price the tar can bring, for that's expected to offset the cost of processing the lignite. And Parry freely states that a lot of "extensive work must be done on chemical composition, production methods, products obtainable, and uses and markets for the products before an accurate estimate can be made of the value of the tar."

EQUIPMENT. . .

Heavy-Duty Tractor: Clark Equipment Co. (Battle Creek) is now in production with a new heavy-duty towing tractor, the Clarktor-75. Equipped with an 82-hp. Chrysler 6A engine, the tractor has a maximum draw bar pull of 7,500 lbs.

Power Line: Dressen-Barnes Corp. (Pasadena) has added new low-priced direct-current units to its line of power supplies. They range from 150 to 500 volts, from \$18 to \$215.

Pneumatic Recorder: Norcross Corp. (Newton, Mass.) is now marketing its new R2P recorder for pneumatic control. Actually a recording viscometer, the unit uses two output air pressures to measure viscosity against a control-set point pressure.

Eye Safety: Stac-Vent safety goggles are the latest offering from Watchemoket Optical Co. (Providence, R.I.). Featuring replaceable methacrylate or acetate lenses, the glasses are designed for the protection of worker against splashing chemicals, sparks, impact hazards.

Fire Fighters: Starting May 24 and lasting for 3 days each, 11 industrial fire training classes will be sponsored by Ansul Chemical Co. (Marinette, Wis.). Purpose: to train plant person-



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^{*}Whose paper on low-temperature carbonization of coal and lignite for industrial use before the St. Louis meeting of the A.I. Ch.E. in December has been published in booklet form by Alcoa.

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PRODUCTION. . .

nel in the latest techniques of fire fighting with dry chemicals.

 Rounding out the industrial fireman's education, National Foam System, Inc.'s (West Chester, Pa.) new booklet on foam fire protection deals with the use of chemical and mechanical foams in combating fires.

Installment Plan: To determine the advisability of purchasing infrared equipment, Perkin-Elmer Corp. (Norwalk, Conn.) now offers units on 90-day trial basis. P-E will install the equipment in a prospective customer's plant, outline a program for its use and train personnel in its operation; then, says P-E, it's up to the customer to determine the economics that are involved.

Bulletins: Covering the latest report on the performance of aluminum heat exchanger tubes, Aluminum Co. of America's new heat exchanger booklet is off the press, will be released next month at the National Assn. of Corrosion Engineers' Annual Conference and Exhibition to be held March 15 to 19 in Kansas City (Mo.).

• The Colonial Iron Works Co. (Cleveland) details the use of customengineered equipment in distillation operations in its new bulletin on distillation, absorption and extraction equipment.

 Now available from The Bristol Co. (Westbury, Conn.), brief W1805 lists all automatic controlling, recording and telemetering instruments available from the firm.

• Showmanship in Safety is the title of the National Safety Council's (Chicago) new book on safety promotional ideas. Containing 150 ideas for displays, demonstrations and other interest-getting devices, the book sells for \$1.25 to council members, \$2.50 to nonmembers, is currently available from the council's Chicago office. Also being offered: the council's new series of human relation training films for foremen.

Ammonia Update: Spencer Chemical will not, as previously reported, use the Casale process for its newly opened, 210-ton-a-day ammonia plant (CW, Feb. 20). Although Foster Wheeler designed and constructed the partial oxidation unit, units for air preparation, shift conversion, carbon dioxide scrubbing, liquid nitrogen wash, the cooling system and the steam plant, Spencer itself designed the ammonia synthesis plant proper. Construction of the latter was handled by Spençer's Quaker Valley Constructors, Inc.

Allis-Chalmers is the one company that can supply the chemical industry with integrated heavy processing machinery coordinated with required electrical equipment . . . machinery and equipment designed to work together, backed by undivided responsibility.



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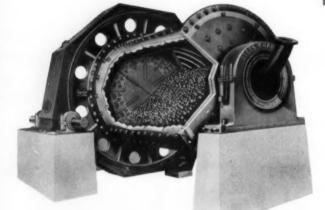
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In the broad line of Allis-Chalmers crushers there is a type and size for every application. For volume primary crushing there is the newly designed, high capacity Superior gyratory crusher. For secondary and tertiary crushing, Allis-Chalmers builds the hydraulically adjusted Hydrocone gyratory crusher. Four types of jaw crushers, a series of roll crushers and the Pulverator, a multi-impact hammer mill, round out the complete line.

In the Hydrocone crusher (illustrated), hydraulic control makes possible quick, accurate size adjustment and fast emergency unloading without stopping the crusher. This is accomplished by hand crank in the small machines. In larger crushers adjustment is a one-man, one-minute pushbutton operation. Hydraulic control also provides compensation for wear and automatic protection against tramp iron and other uncrushable materials.

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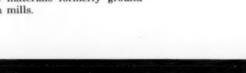
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Ball Mills—for wet or dry 20 to 200 mesh grinding.

Ballpeb and Compeb Mills for fine grinds; stage grinding in multi-compartment types.

Illustrated is the Allis-Chalmers ball mill available in 3 to 12½-ft diameters. This type mill has been proved particularly efficient and economical in grinding less abrasive materials formerly ground in fixed path mills.

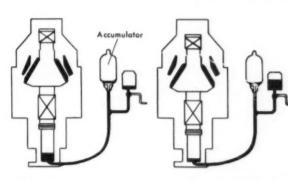


ELECTRICAL EQUIPMENT

Matched for Maximum Efficiency

EGRATED EQUIPMENT

From One Source Backed by Undivided Responsibility



Fine setting — Crushing cone assembly is raised by pumping oil into hydraulic jack.

Coarse setting—Crushing cone assembly is lowered by removing oil from jack.

Tramp iron protection—Bladder within accumulator is nitrogen-inflated to a pressure greater than average crushing pressure. When tramp iron enters crushing chamber, jack oil pressure becomes greater than accumulator gas pressure. This forces oil out of jack — lowers cone to release foreign material.



The Ripl-Flo screen illustrated is built in single, double and triple decks. Sizes 3 by 6 to 6 by 16 feet. Special application screens available with 2½, 3½, 4, 4½ and 5 decks.

SCREENS

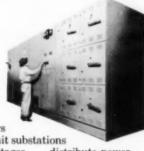
Allis-Chalmers vibrating screens include:

 $\label{eq:Utah} \begin{tabular}{ll} $U tah Electric Screen $--$ Handles a wide range of granular materials, 10 to 48 mesh (dry), 65 mesh (wet). \end{tabular}$

Ripl-Flo Screen — for standard, heavy and extra heavy duty sizing, wet or dry. Mesh range: 35 mesh to 8-inch square; 20-inch maximum feed. Available with Sta-Kleen deck (rubber balls below cloth), and Thermo-Deck heating unit.

Low-Head Screen — for wet or dry screening, rinsing or dewatering. Mesh range: dry sizing ½ inch to 2½ inches; wet sizing, 35 mesh to 2½ inches; 5-inch maximum feed. Available with Sta-Kleen deck for fine sizing. Aero-Vibe Screen — for medium to fine sizing of lump or granular material. Feed sizes up to 3 inches, separations from 28 mesh to ½ inches square. Available with Sta-Kleen deck or Thermo-Deck heating unit.

UNIT SUBSTATIONS



Allis-Chalmers
load center unit substations
step down voltages . . . distribute power . . .
protect circuits, equipment and personnel.
Completely factory assembled, transformer,
switchgear and control combinations are integrated in one attractive, easy-to-install enclosure. Compact and flexible, these units
can be strategically located to bring high
voltages near load centers, with resultant
economy in cable cost, minimum line loss

and efficient voltage regulation.

MOTORS



The tube-type, totally-enclosed fan-cooled motor is particularly adaptable for chemical plant service. Heat exchanger tubes, stator end plates and external fan can be made of metals resistant to acids or alkalies. With mechanical modification, this motor can also be made explosion-proof. Available in cage, wound-rotor and synchronous types. Ratings range from 40 to several thousand horsepower. Other motors available from ½ horsepower up.

CONTROL



design modifications necessary for high interrupting capacity and complete protection for man, motor and machine.





COOPERATIVE ENGINEERING

Your A-C representative is an application specialist - ready and able to work with your staff to solve your processing problems. His recommendations are backed by Allis-Chalmers engineering departments . . . by complete research, testing and pilot plant facilities ... by experience gained in solving thousands of equipment coordination problems. Each processing problem is given personal, expert attention. Engineers and technicians examine and evaluate your process to make existing as well as new equipment as productive and economical as possible.

UNBIASED RECOMMENDATIONS

Because A-C builds many types and sizes in a given equipment line, recommendations are completely unbiased . . . dictated only by your specific needs.

Most important is the fact that Allis-Chalmers interest in your problem is continuous. Laboratory services, periodic equipment check-up, emergency parts service are yours for the life of the equipment.

Allis-Chalmers builds the following types of integrated equipment:

HEAVY

Crushers • Grinding Mills • Screens

LIGHT

Flaking Mills • Roller Mills • Screens

PYRO-PROCESSING

Furnaces • Kilns • Coolers • Dryers

POWER

Generators • Condensers • Pumps • Transformers • Switchgear Substations • Motors • V-Belt Drive • Control

LIQUID HANDLING

A complete line of Centrifugal Pumps

AIR AND GAS HANDLING

Centrifugal Blowers • Axial Compressors

Allis-Chalmers also makes equipment for solvent extraction, electronic heating, metal detection, and inter-floor conveying.

Allis-Chalmers 1150 S. 70th Street Milwaukee 1, Wisconsin Send me the following bulletins:

25C6177, "A-C Equipment for the Process Industries." I would also like bulletins on

(Explanation of process or problem)

type of equipment

Title

... Company.....

Address

City.

Zone..... State.

WRITE FOR LITERATURE

A 28-page insert, "Allis-Chalmers Equipment for the Process Industries," may be found in the Chemical Engineering Catalog. This insert is available in bulletin form (25C6177). Individual bulletins covering specific equip-ment lines also are yours for the asking.



COFFEE BREAK: Before and between talks, just what the doctor ordered along with APMA'S . . .

Prescriptions for Ethical Sales Ills

This year, in their efforts to rack up sales of \$1 billion, ethical drug makers will probably spend about \$300 million promoting these same products. Only too painfully aware of the price they are paying to vend their output, industry leaders are flailing away at the problem of beating down the cost, upping the efficiency of distributing operations.

Last week, buckling down to the third day's session of the American Pharmaceutical Manufacturers' Central Section meetings, held in the Michigan Room of Chicago's Edgewater Beach Hotel, over 100 members of the APMA Marketing Section ingested the latest advice on the all-important question of how to get the product where it can and will be used.

In the course of the day's listening, the APMA marketers were presented, among other thoughts, with:

 A plug for a system "to get more for your promotion dollars."

 A prescription survey and proposals for avoiding new product failures.

A look at how companies, convinced that the day of the "hard sell" has arrived, are stressing "sales-mindedness" within their organizations.

Selling a System: E. Allen New-

comb, executive secretary, National Wholesale Druggists' Association, led off the session with what he frankly admitted as being a "sales talk," a pitch to the pharmaceutical producers to make "intelligent use of the full line service wholesale drug distribution system already available."

Newcomb reminded his hearers of the many millions of dollars expended in researching and developing new products. Mentioning that pharmaceutical manufacturers plow back an average of 7% of sales, he labeled these expenditures "values added to the industry's total product by research and manufacturing know-how."

"However," Newcomb argued, (this was the main theme of his talk) "we still need to give our pharmaceutical product an added value—the value added by distribution."

Deploring the "less rational approach" used by management in dis-

Specialty Selectivity

Abbott survey reveals that of the 9,000 prescription specialties stocked by the average wholesale druggist . . .

... only 38% (3.400) were used in the compounding of 243,000 prescriptions surveyed (by Abbott) last year.

... and a slim 2.8% (256) were employed frequently enough to warrant being classified as "profitable" to the manufacturer.

sweet'en-er

That which sweetens or imparts a sugarlike flavor.

Example: GLYCERINE!

In products like cough drops, toothpastes, candies, capsules, and medicines, where Glycerine's major properties make it an important ingredient, Glycerine's pleasant taste is an extra "plus." Glycerine not only acts as a humectant, demulcent, solvent, plasticizer or preservative in formulations of this type, but also enhances their flavor.

U.S.P. Glycerine is nontoxic and easily digested. Its applications in food processing have been accepted by the American Medical Association Council on Foods, and permitted by Federal and State food and drug authorities.

If you're developing a product that must have any of the properties mentioned—and be palatable too—check Glycerine.

New Pectin Jelly

For example, a concentrated pectin jelly composition was recently patented. When dissolved in hot water and then cooled, this solid aqueous gel forms a larger volume of edible jelly dessert. Glycerine acts as a sweetener.

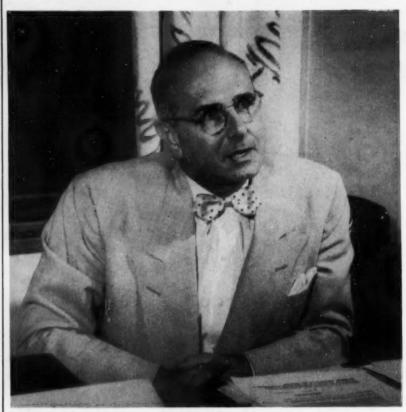
Balance of Properties

Glycerine's sweetening action is only one part of the story. You can count on *versatile* Glycerine to serve as—

preservative bacteriostatic lubricant penetrant bodying agent stabilizer antifreeze blending agent

Booklets on the application of Glycerine in the drug and cosmetic and food fields are available. For your copy, write Glycerine Producers' Association, Dept. CW, 295 Madison Avenue, New York 17, N. Y.





DIAGNOSTICIANS: Pfizer's Emelin, Abbott's Stiles (upper right) NWDA's Newcomb

tribution (than in research and production) he claimed that the \$300 million spent in detailing and promoting pharmaceutical specialties still do not give the products the plus time and place utility values to be expected.

NWDA-man Newcomb chalked off other-than-wholesaler-retailer channels in this fashion:

 Direct-to-physician. "Physicians are neither druggists nor businessmen.
 In addition, the problems of handling accounts with 150,000 physicians are almost insurmountable."

• Direct to hospitals, clinics, or physicians' supply houses. "Cannot give adequate distribution."

Direct to retail druggists. "Completely unrealistic. No manufacturer can sell direct to 50,000 drug stores and no druggist can run his business and still (deal) with the hundreds of manufacturers represented by his inventory."

Winding up his plea for a distribution "plus," Newcomb urged that manufacturers "plan a program for the physical movement of the goods to the customer."

Research for Markets: Abbott's Director of Market Development, Dave Stiles, emphasized the need for more planning before launching a new product.

First, Stiles tackled the subject of "duplication" or "substitution"—target for much criticism of pharmacy practice. Agreeing that some pharmacists go counter to professional ethics in trying to deny the physician the right to specify brands, Stiles maintained that both the pharmacies and the manufacturers are to blame for this state of affairs.

Some of the most flagrant examples of "substitution" occur, according to Stiles, where no bona fide duplicate exists.

But, Stiles contended, pharmacists do not "substitute" unless they do not stock the item specified. Basic cause of difficulty is the large number of near-duplicate products offered by manufacturers, the sales of which are too slow to warrant stocking by the average small pharmacist.

One result of a recent prescription survey conducted by Abbott documents Stiles' point. The survey shows that of all prescriptions sold:

• 70% of all drugstores sell 25 or fewer per day.

• 26.5% fill 26 to 75 a day.

DISTRIBUTION. .





(bottom) suggest cures.

• Only 3.5% of all stores, including the chains, fill over 75/day.

Net result: most pharmacists object to carrying "duplicate" products that move slowly.

Stiles traced much product duplication directly to the door of the sales manager. Most suggestions for items to add to the product line stem from the sales force, he claims.

"And how do salesmen get ideas?" he asked his audience. "By looking at successful items of the competition."

Profitless Products: Convinced of the importance of planning for more efficient selling, Abbott started its mass survey of prescriptions about 2½ years ago. By now, the company has tabulated over 500,000 prescriptions, 243,000 of them in 1953.

Some Abbott findings:

• Of 3,400 specialties appearing in the 243,000 prescriptions, only 7% could be definitely tagged as "profitable" (to the manufacturer); 33% are in the doubtful range (hovering around break-even point); the remaining 60% are in the definitely unprofiable category, being employed by physicians less often than once per 10,000 prescriptions.



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Newcomer's Chances

Of the 2000-odd specialties aimed at the medical profession over the past five years . . .

... 54 hit the center circle of the 100 most profitable items.

But, at the same time, a mere 100-odd (including the "smash hits") sold well enough to better than break even.

Which adds up to:

- An established top specialty is always battling fierce competition from newcomers.
- Chances of a new product's becoming profitable are only 1 in 20.

• Should a product be in sufficient demand to fall in the upper 7% "profitable" category, a manufacturer can probably expect at least a \$400,000 annual market for it.

Promotion Limit: Based on his findings, Stiles made a plea for more study and planning prior to introducing new products. In his opinion, too often items are recommended for marketing on such illogical bases as:

"It's the idea of our research manhe's spent a lot of time on it and if we didn't approve it, he'd get discouraged." Or perhaps,

"One physician uses it in experimental work, wants to keep on with it."

In contrast with these unplanned approaches, Stiles advanced these suggestions:

- "Where there's no urgent need for immediate introduction, use test marketing more."
 - · No matter how large the sales

force, remember there's a limit to how many new products they can detail to the doctors in a year. Sixteen is about ideal; 30 to 40 is the limit; spreading efforts thinner simply results in less promotion per product.

 Answer the flood of demands for new products through market research. And be sure the marketing department deserves and receives confidence.

Selling Through Cooperation: Pfizer's Director of Operations Arthur Emelin urged his audience to encourage employee participation in increasing sales.

Emphasizing that "hard sell" means more than making the salesman get out and hustle, Emelin stressed "salesmindedness" throughout an entire organization as the key to selling suc-

"Hard sell must be built into the product from the moment it's dreamed of," Emelin pointed out, "and for that reason, everyone within your organization must be sales-minded."

Well aware that sales spirit can be developed only after good communications have been established between management, sales, production and research, the APMA heard Emelin outline steps taken at Pfizer.

To make certain company personnel get to know each other's problems, staff members rotate luncheon tables in the company's dining room, spend each lunch hour with a different group of men, in this way get direct answers to questions they may have about company operations in other departments.

In addition to luncheon communications, Pfizer promotes sales thinking through:

 Sales trips for research, product development, and production groups who "spend a day at a time with a salesman."

 Office staff gatherings during which a salesman illustrates the importance of good support from the home team.

 Group discussions on packaging between the field sales staff and the production and packaging departments

For Healthy Growth: Regardless of which prescription the APMA members were inclined to take, they appeared to be more aware than ever of the need to be in top condition for the period of business challenge ahead.

And on this much the leaders agreed: regardless of how one handled the challenge, there would be an increasing premium on greater distribution efficiency, more selective products, and stronger sales effort.

Pure enough to grow a perfect crystal

pany, world's largest producers of synthetic piezo-electric crystals required phosphoric acid of exceptional purity for use as a component of the solution in which ADP* crystals were grown. Even minor impurities in the acid caused a distortion in the shape of the crystals. Leading producers of phosphoric acids were invited to submit samples.

was found that only V-C 85% N. F. Grade Phosphoric Acid met the rigid requirements for purity. Brush Electronics uses V-C acid exclusively for growing ADP crystals.

*Ammonium dihydrogen phosphate.

Perhaps V-C's high-purity 85% N. F. Grade Phosphoric Acid can help you over-

It will pay you to get in touch with V-C for a complete review of your phosphoric acid requirements. In addition to high-purity 85% N. F. Grade, V-C also manufactures 80% Food Grade, 75% Food Grade and 62½% Commercial Grade Phosphoric Acids. The services of technical experts are available to you without charge or obligation.

V-C Phosphoric Acids are shipped in glass carboys, stainless steel drums, latex-lined barrels, rubber-lined tank trucks and tank cars. Forty-eight hour tank truck delivery in Middle Atlantic and Southeastern states.

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★ As an example of the ability of Chemi-Form specialists, we just recently developed an Aerosol package for penetrating oil. This particular problem had never before been licked by Aerosol packaging. Now penetrating oil can be more successfully merchandised since the new package allows previously inaccessible places to be easily reached.

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When an assignment is given us to develop an Aerosol package we will cooperate with you in conducting a test run. This is done at low cost to demonstrate the effectiveness of the package and to give you an idea of the merchandising value.

If it can be put into an AEROSOL package we can do it.

Our assignments have given us experience with hard-to-package waxes, oils, and silicones. Also for critical compounds in drug, cosmetic, and chemical fields.

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Chicken in a Bag

"IT'S IN THE BAG!" might well be the sales slogan for the new Cryovac-wrapped, ready-to-roast poultry. This week, Dewey & Almy Chemical Co. is showing poultry, processors how they can safely package and market stuffed frozen poultry, hopes to wrap a large share of the \$1.25-billion poultry market.

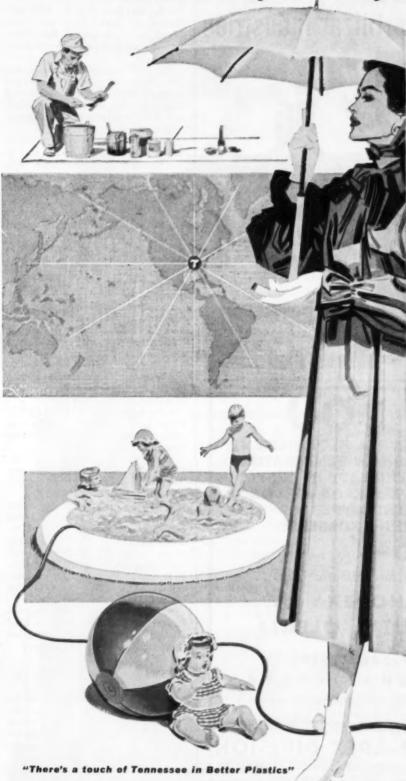
Big advantage of the method, according to Dewey & Almy, is convenience. Since the plastic-wrapped fowl can be popped into the oven—bag and all—without further preparation by the housewife, anyone who can light an oven and tell time can do a perfect job of roasting a turkey or chicken.

D&A's Cryovac Div. makes both the polyvinylidene chloride packaging and the evacuating machinery for poultry packagers. The prestuffed chicken or turkey eliminates involved preparations by the homemaker; basting isn't necessary since the steam-shrunk bag keeps the flesh moist. If the cook wants the meat to be a golden brown, the bag can be opened about an hour before the roasting is done. It's claimed the Cryovac material won't shrivel or burn during the cooking process.

Following a successful test-marketing in New York state, Dewey & Almy thinks its packaging may help to change the nation's poultry eating habits. With prestuffed poultry, the company maintains, the whole roasting process becomes as easy as boiling water.



New Plasticizers Improve Vinyl Compounding



TENNESSEE announces Benzoflex 9-88 and Benzoflex 2-45 for PVC resins and other film formers.

These new primary plasticizers from TENNESSEE research bring these important advantages to manufacturers of film, plastisols, organosols, extrusions and emulsions:

Impart good tensile strength, elongation, elasticity and shore hardness to vinyl films.

Produce plastisols and organosols of low, permanent viscosity.

Volatility from films is very low. Does not crystallize at low temperatures.

Have strong solvent action on vinyl chloride resins.

Their cost is low.

Benzoflex 9-88 and 2-45 are also compatible with cellulose acetate and nitrocellulose type resins.

Write today for complete information and samples of Benzoflex plasticizers.



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DISTRIBUTION. . . .

Restrictions Eased

For the first time since the 1947 port disaster at Texas City, the Coast Guard has lifted part of the restrictions on unloading explosive fertilizer mixtures.

The 1947 regulations allowed certain ammonium phosphate fertilizer mixtures to be loaded and unloaded only at isolated docks meeting federal and local regulations for dangerous

The new rules say these mixtures may now be handled at any pier, if the handling is in accordance with Coast Guard regulations for "explosive or other dangerous articles on board

For the Bookshelf: Among the current offerings are these:

· Carbide and Carbon Chemicals Co. (New York City) has issued a bulletin on isopropyl acetate. Data include physical and physiological properties, shipping information and performance in nitrocellulose lacquers.

• American Cyanamid Co. (New York City) has available a 159-page New Product Bulletin, Collective Vol. III" reviewing new products being marketed by the firm for trial use.

• Philadelphia Quartz Co. offers a booklet describing properties and uses of sodium sesquisilicate.

• Magnus, Mabee & Reynard, Inc. (New York City) has issued a new catalog. Listed: essential oils, perfume bases and flavoring materials.

• Monsanto Chemical Co. (St. Louis) offers a technical bulletin outlining the pharmacology and toxicology of salicylamide.

· Allied Chemical & Dye Corp. (New York City) has released two publications from its Nitrogen Div.: a 33-page bulletin on ethylene oxide, ethylene glycol and diethylene glycol; a 200-page bibliography, "Feed Urea in Ruminant Nutrition," for scientists and research organizations working

in the field of animal nutrition.

• Dartnell Corp. (Chicago publishers) has placed on sale a revised printing of "The Sales Promotion Handbook." Author: John Aspley.

Building Expansions: Now under consideration:

- · A 31-tank storage depot on the Duwamish Waterway to be established by the Port of Seattle. It would provide 4.5 million gal. storage for vegetable oils, molasses, fish oils and
- · A \$250,000 building for McKesson & Robbins, Inc., in Little Rock,

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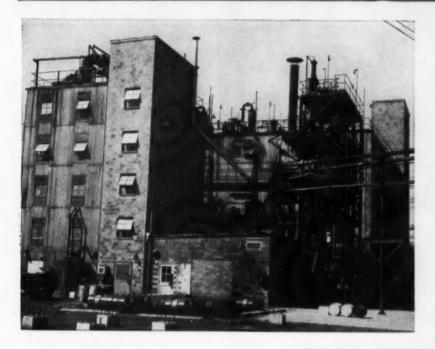
LIGHT FOR FLIGHT, TOUGH FOR SAFETY, 225 fiber glass reinforced polyester resin parts take the air in each F84 Thunderjet. Such thermosetting resins are produced by dissolving alkyd resins made with maleic anhydride and phthalic anhydride in a vinyl or allyl monomer. Long a prime source of phthalic, Cyanamid is now also offering AERO* Maleic Anhydride, in briquette form. A new data sheet on its properties and applications will be sent at your request.

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NEW LOWEST COST SOURCE FOR GUANIDINE RADICAL is AERO* Guanidine Hydrochloride, Technical. Savings are now possible for all users of guanidine, including manufac-

turers of pharmaceuticals, dyestuffs and resins. Check the coupon for new bulletin on application and handling of this grade of Guanidine Hydrochloride.

*Trade-mark



OLD WALLS ENCLOSE NEW EX-PANSION. Within the walls of Cyanamid's Warners, N. J., plant, additional production facilities for AERO* Cyanuric Chloride meet today's increased demand. Recent applications in plastics and resins have been added to its use in dyes, optical bleaching agents, and many other chemicals. For two additions to your library on versatile Cyanuric Chloride, check the coupon.



CHEMISTRY IN THE GLUE POT improves performance of newly-marketed starch and protein glues. With a fluidifying agent added, high solids content is maintained and glues stay smooth and workable. Unlike many fluidifying agents, "Dicy" (AERO* Dicyandiamide) goes further, cuts cost.

SPECIALTIES



LAUNDRY DRYING: To supplement the sun, \$10 million worth of whiteners.

More to Meet the Eye

Nylon brightening is hailed as the new chore for optical whiteners in home-use soaps and synthetic detergents.

New application points to wider use of the white dyes in light-duty washing products, as well as bringing in a novel promotion theme.

Heavy-duty detergents soak up most whiteners now. Commercial laundry products, textile and paper applications are still just getting into stride.

On grocery shelves last week in Chicago and New York, its coming heralded by full-page newspaper ads, was the newest formulation of Armour & Co.'s Chiffon soap flakes. In featuring the nylon whitening ability of its Chiffon, Armour could well be pacing the light-duty laundry product field formulationwise, besides striking a new promotional note.

Chiffon's well-publicized swing to nylon whiteners, however, is far from the only recent change in whitener use in soaps and detergents. As one optical bleach maker put it, with a competitive grin, "every major soaper in the country has switched his whitener in the last six months."

That means the 15-20 firms vying for the \$10-million stake in whiteners haven't eased up one whit in their sales scramble. These firms include current leaders (positions apparently fluctuate with giddy unpredictability) like American Cyanamid, Antara, Du Pont, Hilton Davis, and National Aniline, as well as Geigy, Ciba,

Sandoz, Koppers, Maher Color and Chemical, Carlisle Chemical, and others, any of which might take a top position.

Their competition has boosted sales of the white dyestuffs to a near 2 million lbs./year, with the majority of the products ending up in detergents for home use. Textile use (milltreated nylon is getting fairly common now) and paper applications take roughly equal, somewhat smaller, percentages. The U.S. Tariff Commission report on 1952 production of the direct white dyes shows some 1,327,000 lbs. being turned out, and 1,442,000 lbs. sold at a unit price of \$3.72. It would seem that textiles and paper utilize more of bleach than many firms estimate.

Heavy-duty detergents (about 1.69 billion lbs. were made last year) are generally fortified with the bleaches. Soaps, and light-duty detergents are less frequently made with them, but there is still a market for about 1 million lbs./year of whiteners.

Just a Pinch: That's a sizable market for a product used in pinch quantities—about a pound/ton in detergents. But at a fairly painless cost, the brighteners have permitted synthetic detergent makers to offer a demonstrable extra, so brightener success is closely allied to that of the syndets.

A number of other washing products employ the whiteners—blueing soaps, starches, nylon wash compounds, acid sours, perborate bleaches, and even hypochlorite bleaches. Home blueing compounds nearly all contain the optical whiteners now in 3 or 4 times the amount detergents do.

Use in paper, to make it whiter (and to absorb ultraviolet rays that might damage products wrapped in the paper), is about as old as use of the optical bleaches in washing aids.** There appears to be a considerable area as yet unexploited in paper treatment, where the dyes would compete with titanium dioxide.

Ahead is a specialty use with "interesting" possibilities—embodying the whiteners in hair shampoos. Blondes would get the break, of course, with extra lightness produced by the dyestuff. One problem has been that of getting whiteners that are stable in solution, but at least one major soap firm has definite interest in a fortified shampoo t

Light Switch: The way these white dyes work has become pretty generally familiar by now—they produce light from energy that ordinarily wouldn't register in the eye. Some complex molecules (of a number of classes that includes umbelliferones, diphenylimidazolone, benzocoumarin, diaminostilbene) can absorb ultraviolet light and emit it as a blue-white light.

In this conversion, which is not unlike the absorption of sun-burning rays by sun-screening compounds, the molecules are eventually broken down by the absorbed energy. Thus the whiteners won't find use in exterior paints where exposure to a couple of days' glaring sunlight would destroy the

Even hanging clothes in direct sunlight for a day destroys a measurable percentage of the bleach, but that is compensated for by the bleaching effect of the sun itself.

For years the bleach makers have concentrated on products that would brighten cotton and the other cellu-

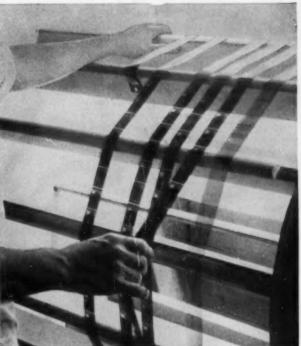
** They got their start in Germany, and as long ago as 1929 umbelliferones (which had no affinity for textiles) were used to whiten bar soap. The late '30s saw their introduction for textile use in Europe.

† The Food & Drug Administration will likely have a hand in this, since colors (even these "whites") in shampoos must have FDA approval.

[&]quot;Arctic Brite," the ballyhooed whitener, is currently made by Hilton Davis.



Paint, Varnish and Lacquer



Photographic Films



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losics. Attention to wool, and to synthetic fibers came later. For textile use at least, generally satisfactory compounds are now available for

nearly everything.

A whitener for home nylon-washing products faces some problems in addition to those met in textile applications. Most of these wash products are light-duty formulations, used in lukewarm water for a minimum of time. Nylon laundering specialties, then, will likely have an extra-heavy shot of bleach, and probably a lot of it will float down the drain.

New Light: Search for nylon substantive products (those with an affinity for nylon) has led to new life for umbelliferones, which had been somewhat eclipsed in recent years. Other nylon whiteners are aminocoumarins; they are offered by several

firms.

Not only are new optical bleaches being uncovered, but others are being improved, as well. A typical whitener costs about \$5/lb., but it is currently three or four times as effective as similarly priced compounds of a few vears ago.

There have been a number of other improvements-bleaches designed for and limited to specific applications such as textile and paper bleaching. On the other hand, there are products substantive to a wider

variety of fibers.

Hypochlorite resistance has been boosted. Time was when a housewife who poured in hypochlorite bleaches before the optical dye had a chance to set in the cloth destroyed most of it before it could do any good. While it is still advisable to give the whiteners first chance at the fiber, detergent makers can buy hypochlorite-proof compounds, and at least one of the top-selling products has a resistant whitener. (Perborate bleaches don't bother most whiteners.)

Glowing Future: In washing products, in specialty items like shoe polishes, or in applications where fluorescent dves are used to trace leaks. optical bleaches are just finding their niche.

They're also just coming into their own as brighteners for paper coating lacquers. And abroad, end uses are even more diverse-very small percentages find their way into foodstuffs like flour and sugar, to make them attractively white without the cost of additional refining.

They're still a small, though profitable business. They haven't vet reached their full potential, but dvemakers hope the rapid strides made in the past 10 years will continue.



SUNDAY PUNCH: For more rugged Stratofortress, Teflon fuel lines for I-57 jets.

Teflon on the Wing

Chemistry's contribution to the aircraft industry is a continuing thing. Newest of the products is a plastic hose made from Du Pont's fluorocarbon resin, Teflon. Purpose: to handle new synthetic oils and fuels used in latest-design jet engines.

Originator of the hose is Resistoflex Corp. (Belleville, N.J.), which says it will carry practically all corrosive liquids at temperatures ranging from minus 100 F to 450 F without physical, structural or visual change.

Pipe, Too: A companion product is a pipe designed "for the chemical process industries." It's lightweight, nonfrangible, can be cut and fitted on

Development of the hose-Fluoroflex-T-began four years ago when it became evident that synthetic oils were destructive to conventional fluidcarrying materials. The answer, according to Resistoflex, is a seamless extruded tube of Teflon, reinforced with a braided jacket of steel wire and coupled with high-strength steel fittings.

Up to Snuff: The hose meets all the specifications set by its maker and has shown other features as well in lab tests just completed by Pratt & Whitney Aircraft, manufacturer of the J-57 jet engine. Now it must pass comparative engine tests. Other interested engine makers are Republic, Westinghouse, and General Electric.

Actually, Teflon is not new to the aircraft industry. It has already proved its efficacy in gaskets and in wire insulations in jet engines. Other suggested hose applications are in hydraulic systems requiring noncorroding conduit, and in guided missiles.

In the chemical industry, Teflon tubing is currently employed in labs and in production.



TEFLON TWIST: Bendable, corrosionproof at 100 F below.

Resistoflex's pipe is available in sizes ranging from 1-4 in.; the hose comes in 7 sizes from 1/4-1 in.

No Slump in Suds

Synthetic detergents have continued to pull away from soaps, according to the census made by the Assn. of American Soap & Glycerine Producers on last year's production. Combined soap and syndet sales climbed 3.3% over 1952's volume to a 3.5-billionlbs. total, climbed 8% dollarwise to \$746 million.

Synthetic detergents have now about 53.2% of the total sales of the washing compounds-over 1.8 billion lbs. of the liquid and solid synthetics were made. Soap sales fell about 12%, with 1.6 billion lbs. moving in '53. Dollarwise, syndets gained 26% in '53.

Still outstanding growth products

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A DAY combines rugged construction with precision engineering. That's why DAY Pony Mixers are delivering extra years of trouble-free, econom-

ical operation in plant after plant. DAY features result in higher production at a lower cost, protect the quality and uniformity of your product. An important feature is the interchangeable can unit-eliminates delay between batches. Lift truck with hand pump hydrau-



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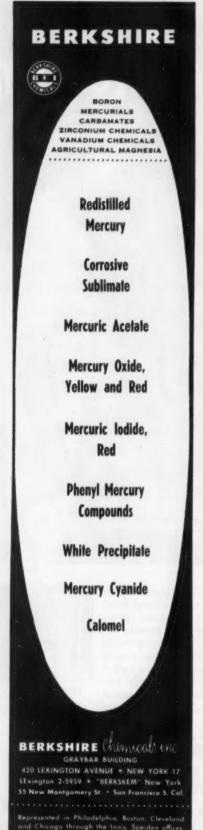
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SPECIALTIES.

are the liquid synthetic detergents. Sales of 94.6 million lbs. were reported, nearly a 91% increase over '52, and twice the production of '51.

On the Grow: Adding, enlarging, or acquiring are several specialties firms. Among them:

 Renuzit Home Products Co. (Philadelphia) has acquired two new plants in St. Louis and Chicago to increase production of its odorless dry cleaner and spot remover, and to cut retail prices in the Midwest by reducing shipping costs of these products.

 Allied Paper Mills (Kalamazoo, Mich.) is expanding its operations by erecting a new baryta- (barium sulfate) coated photographic base paper plant. Production facilities will include a new supercalender stack for applying the high finish required for photographic glossy prints.

• Permatex Chemical Co., Brooklyn, producer of maintenance and sealing compounds, is starting construction of a \$500,000 plant in Kansas City, Kan. The fully air conditioned plant will be equipped for mixing, manufacturing and packaging, and is due in production in August, the company says.

• Procter & Gamble Co. is also boosting the size of it facilities, is ready to start construction of a 67,000-sq.-ft. addition to the manufacturing, administration, and research building at Ivorydale, O., and a 50,000-sq.-ft. enlargement of the Miami Valley Labs (near Ross, O.). It's estimated that the Ivorydale construction won't be finished until mid-'56; the Miami Valley job is due for completion by mid-'55.

• Gilman Paint and Varnish Co. will start construction next month of a \$90,000 warehouse in Chattanooga, Tenn. The 25,000-sq.-ft. plant will be of steel and concrete construction.

• Organic Service Co., Anaheim, Calif., producers of the enzyme soil conditioner Pent-a-vate, will double production this year, and will increase plant storage capacity.

• Expansion of another sort marks the latest moves of Plough, Inc. That pharmaceutical firm has just purchased two well-known medical products from Esso Standard Oil Co. The products, Nujol and Mistol, will be made in Plough's Memphis, Tenn., plant; stocks of them are now being moved to Memphis.

• Planter Fertilizer and Phosphate Co., Charleston, S. C., has purchased the plant and property of the Sumter Fertilizer and Mfg. Co., Sumter, S. C.

 Wyandotte Chemicals Corp, began construction last week of a new plant for the manufacture of specialized cleaning and sanitary products. The facilities, at Los Nietos (near Los Angeles), will contain research and technical service labs, manufacturing and shipping areas, and the Los Angeles district sales office. Plant is due for completion by August.

• Connecticut Chemical Research Corp., Bridgeport, Conn., is building a new plant in Wolverhampton, England. To be known as Midland Aerosols, Ltd., the plant will be equipped by Connecticut to turn out about 100,000 units daily. It's due in operation April 1. The firm also has licensed its patented developments in pushbutton valves to Specialty Valves, Ltd., Birmingham.

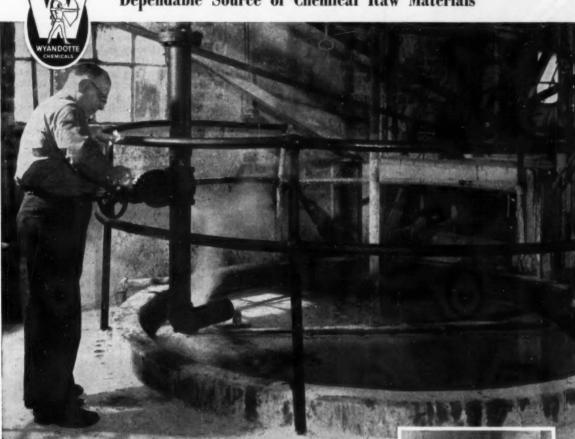
Safe for Babies: The Food & Drug Administration has decided that baby powders containing boric acid are not harmful. The agency says the ruling applies to powders in which there is as much as 5% of boric acid. Spokesman for FDA said that he knew of no baby powder on the market containing more than 5%. The investigation began last fall as the result of reports that the acid in baby dusting powders could cause harm.

Flare-up On Flammability: The question of who should be responsible for the flammability of fabrics has become more controversial than ever. Latest move: the Textile Distributors Institute, Inc. has just refused publicly to accept the responsibility. Touching off the action was a letter sent by the National Federation of Textiles, Inc. to the Federal Trade Commission in which it was suggested that such responsibility be centered at the con verter's level. The position of the Distributors Institute, which represents converters of synthetic fabrics selling to the women's wear manufacturing trade, is that it would be simpler for a mill to test the cloth than for each of its customers to do the testing.

Baby Product: General Electric's Chemical Div. is currently test-marketing a baby-bottle nipple made of silicone rubber. Claims: that it won't clog or get limp, that it will last longer than ordinary nipples.

For Calves: A new form of Aureomycin chlortetracycline that can be given orally to small animals and to calves is now being marketed by Lederle Laboratories. The product is said to be especially effective in treatment of scours and pneumonia when calves are less than four weeks old. These two diseases cause the heaviest losses in the average herd.





Ben F. Eldridge, foreman, prepares a batch of cooking liquor for making strawboard.

"We'd like to put in a good word for Wyandotte Product Control and Tech Service"

The Weston Paper and Manufacturing Co

The Weston Paper and Manufacturing Co, Terre Haute, Indiana, has used Wyandotte's caustic in pulping straw for RED STRIPE corrugating medium over twenty years.

Ralph Shiflet, Vice President of the Terre Haute Division, states, "In producing high-crush-test, corrugating medium it is imperative that caustic be uniform. Continuous checks through the years prove Wyandotte Caustic consistently meets our highest standards of quality and uniformity."

He further observes, "Weston has

certainly enjoyed the fine co-operation and service provided by Wyandotte's technical staff during this long period."

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Ralph Shiflet



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SPECIALTIES . . .

Manufacturing Help: New products that can help in a number of manufacturing lines:

• Schwartz Chemical Co. (New York) says that its styrene cleaner, Poly-Kleen, helps metallizers improve adhesion of base-coat lacquer. Reason: the cleaner removes grease and mold lubricants without crazing or marring the stock.

• Two new adhesives, solventbased Polybond G-1028 and waterbased Polybond K-393 for use in bonding cellulose tri-acetate film, are now being marketed by Polymer Industries (Springdale, Conn.). Both are machinable on standard adhesive equipment.

A high styrene-butadiene copolymer latex developed as a pigment binder in paint is being made by American Polymer Corp. (Peabody, Mass.). Name: Polyco 556. Claim: freeze-thaw stability.

 Pittsburgh Coke & Chemical Co. now offers an epoxy plasticizer, Pittsburgh PX-800 Epoxy, which it says improves the stability and permanence of vinyl formulations.

 Dewey and Almy Chemical Co. (Cambridge, Mass.) is introducing an "internally plasticized" copolymer for polyvinyl acetate emulsion paints. It's claimed to give increased water resistance to such paints—and permit use of them in such applications as exterior painting of wooden surfaces.

 Celanese Corp. of America is now selling a special formulation of cellulose acetate, S704, developed expressly for vacuum forming. Celanese's Plastics Div. is handling the new material, offered in clear and colored stock.

 Grease and humidity resistance are features of a new acrylic plastic finish offered by Logo, Inc. (Chicago).
 Logoquant SF252 is also said to be particularly resistant to citrus juices, soaps and detergents. It's available in pigmented colors and metallics.

 Scotchcast Resin #3 is an epoxytype insulation resin introduced by Minnesota Mining and Manufacturing



Vest-Pocket Antenna

AN OUNCE IN WEIGHT, but getting more than a little attention is a silver dollar-size TV antenna developed by a Denver Plastics firm. The baby aerials, invention of Denver Plastics Inc.'s Raymond Millard, are pouring out of his factory at an 85,000/week clip now.

Although Millard disclaims knowledge of just how his device works—it's claimed to pull in signals of stations 30 miles away—it's no secret that the unit contains half a dozen pea-size galena (lead sulfide) crystals. These are bonded to a 13-strand wire within a plastic cup; an 8-ft. lead can be attached to either of the set's antenna terminals. Empire Specialties (Denver) "fair trades" the units for \$2.49.



The ULTRAWETS wet, penetrate, clean, emulsify

TURNING LIQUID SUDS INTO SOLID SALES

Modern household shoppers appreciate a good thing when they find it. That's why the demand for new liquid dishwashing detergents is increasing so rapidly.

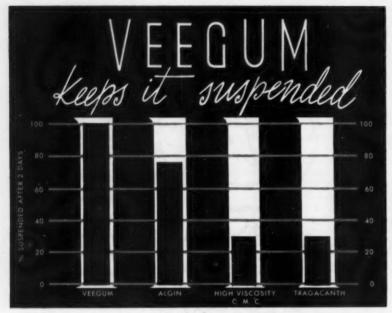
Look at the advantages: greater economy, no sneeze, no sink scum, instant solubility, pleasant odor, easy handling. These are features that can mean extra volume for you on the retail sales front. And many of today's fastest selling liquid detergent brands are formulated with liquid Ultrawets—products of the Atlantic Refining Company.

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Let us send you complete information on the Ultrawets. We can supply you formulations, or help you develop your own. Send coupon, or write.

Philadelphia, Providence, Charlotte, Chicago, In the Weet: L. H. Butcher Co. In Canada: Naugatuck Chemicals Division of Dominion Rubber Company, Ltd. In Europe: Atlantic Chemicals SAB, Antwerp, Belgium





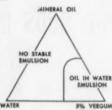
To test the suspending ability of VEEGUM, 4 g of Nytal 300 (an R. T. Vanderbilt Co. talc) were suspended in 100 cc each of aqueous dispersions of VEEGUM and organic gums at 65 centipoises. After all suspensions had 2 days to settle, VEEGUM held from 28% to 300% more talc suspended than any organic gum tested. Results were similar when we tried pyrophyllite, clay, colloidal sulphur, and such organic compounds as DDT.

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SPECIALTIES. .

Co. (St. Paul, Minn.). Resin is said to have long pot life and quick cure it's a two-part liquid material—and is designed for embedding electrical resistors, pre-amps, etc.

 Franklin Glue Co. (Columbus, O.) is offering a new polyvinyl acetate glue for wood bonding. Called Titebond, it's a ready-to-use liquid, is said to have unlimited working life. Samples are offered by Franklin.

H. V. Hardman Co., Inc. (Belleville, N. J.) is also introducing a new glue. It's Phenoweld, and it's a thermosetting industrial adhesive particularly suggested for bonding both similar and dissimilar materials. Phenoweld is an adhesive-in-solvent system; it can be sprayed or brushed on.

 A pair of polyester resins have been put on the market by American Cyanamid. They are Laminac 4111, a fiber glass laminating resin claimed to impart extra-high chemical resistance, and Laminac 4110, developed particularly for low-temperature curing.



Platter Page

A NOVEL TOUCH is the "talking ads"—phonograph records that can be taken out of magazine advertisements and played on a 78 rpm. turntable. First to use the idea was Fedders-Quigan Co. (Buffalo), which ran such ads in last month's issues of Electrical Merchandising, and in Institutions (see cut).

Originator of the medium is Sight 'n' Sound Enterprises (New York), which prints the page, laminates it with cellulose tri-acetate, then presses the record. Cost for the Fedders job was 21¢/unit. here's how you can use ...

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MUTUAL SOLVENT IN

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INTERMEDIATE FOR

- * Low-volatile herbicides.
- * Vinyl plasticizers.

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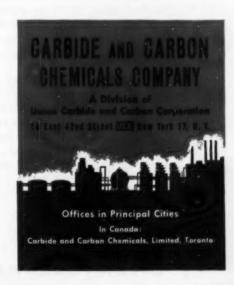
* Important brake fluid diluent.

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For additional information and prices, call or write the nearest Carbide office. Ask for the technical bulletin on butyl Cellosolve (F-7862) or for family books on groups of compounds mentioned above.

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Want a reason why? Look at Business Week's report on Tomorrow's Management ... "to a large extent automation already exists in some process plants . . . a labor content as low as 10 percent . . . a trio of new chemical plants with a capital investment of several million dollars ... a few hundred men run the entire integrated operation."

Want more? See what these process plant operators are up to now. Look at these reports from CHEMICAL ENGINEERING on . . . Rubber By Pipeline - New Silica Brick By Pushbutton - Industry Hires Captain Video. Take a good look at this workbook . . . at the production-loaded editorial content . . . at the how-to, show-where journalism that more chemical engineers pay for and prefer to any other magazine in this bustling market.

How about it? Want a way to put that "Look, Boss, no hands!" touch in your own CPI selling? Try the chemical engineer's business paper ... your salesmen will love it! So will you when you begin to feel the boost from this low cost, high readership advertising . . . the kind 700 successful CPI sellers know pays off best . . . in CHEMICAL ENGINEERING.





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A close-up of the fully automatic CPI factory
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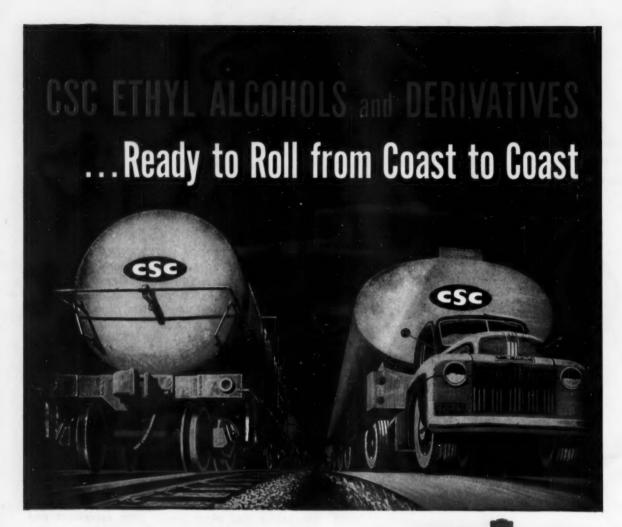
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RESEARCH

A Case for Competition

Here's the reply of one nonprofit research institute director to charges that his kind of organization is in unfair competition with industry.

There has always been a certain amount of sniping at the not-for-profit research institutes and foundations by one tax-paying faction or another. Until recently, the attacks were more of a nuisance than a serious threat to the institutes. Last September, however, open warfare was quietly declared by the aircraft industry.

In a letter to Assistant Secretary of Defense for Research and Development Donald Quarles, Admiral D. C. Ramsey—president of the Aircraft Industries Assn. of America, charged that tax-free organizations are in unfair competition with industry in applied research and development work.

Crux of Ramsey's case is the claim that university scientists, drawn into applied studies during World War II, exhibited no apparent tendency to return—as he puts it—"to their primary concern of basic research."

"In fact," the AIA president alleges, "a number of educational institutions, enjoying large tax-free benefits, have established laboratories under separate management to handle governmental contracts covering the whole range of this expanded field."

And, in behalf of his organization, Ramsey forwarded a resolution that called on the Defense Dept. to stop awarding applied research and development contracts to nonprofit organizations.

For the record, Ramsey's remarks and recommendations concerned themselves only with fields in which the aircraft industry is interested. But their implication to all nonprofit institutes, regardless of their spheres of activity, was obvious. Clearly, a threat to one (Cornell Aeronautical Laboratory, in this case) was a threat to all. Some, with extensive government contracts (see box) had more to lose than others. But, without exception, the institutes were alerted to the danger to their continued tax-exempt existence; few, however, took public steps to counter it.

Since Ramsey's fireworks-provoking letter, no official action has been taken by the Defense Dept. (although the matter presumably is under study). Over on Capitol Hill, moreover, Rep. B. Carroll Reese's (R., Tenn.) House committee* investigating tax-free * Formerly the Cox committee, Reese's group appears to be covering little ground that was not already explored by its predecessor.

^{*} Composed of leading aircraft manufacturers and aircraft equipment suppliers.

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 Distillation of oils and fatty acids
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RESEARCH .

foundations appears unlikely to become involved in the hassle.

Ignoring the problem, however, hasn't diminished it. The pot is still boiling with as much vigor as ever.

"If we went 'profit' we'd have to charge more."

This week CW journeyed to Stanford, Calif., called at Stanford Research Institute for one institute chief's views on the situation. Director Jesse Hobson heads an organization that employs 694 people, does business with 287 individuals and industrial companies, took in \$6 million last year, 48% of which was revenue from government contracts.

Hobson has some definite ideas on the subject of how his organization operates. "There is very little basis," he opines, "for complaints of unfair competition against the nonprofit institutes. We are currently operating at about a 5% surplus. We bid on contracts for jobs like any 'profit' company. And we don't get our bids on

"It's a simple matter of bringing in more money . . ."

a lowest-cost basis; on one particular job we bid \$250,000 against an East-ern outfit's \$150,000. We got the job.

"It's true that we don't pay federal and state income taxes (although we pay all others). But, on the other hand, we earmark about 30% of our surplus income to work in the public interest. That cuts down the amount we can plow back into the institute." The institutes' ability to reinvest tax-free dollars is one of the chief points in their critics' cry of "unfair competition."

"And look at it this way," he gestures, warming to the subject, "that 30% is analogous to industry's tax dollars, which also support research in the public interest. The difference

"Our surplus would not satisfy private investors."

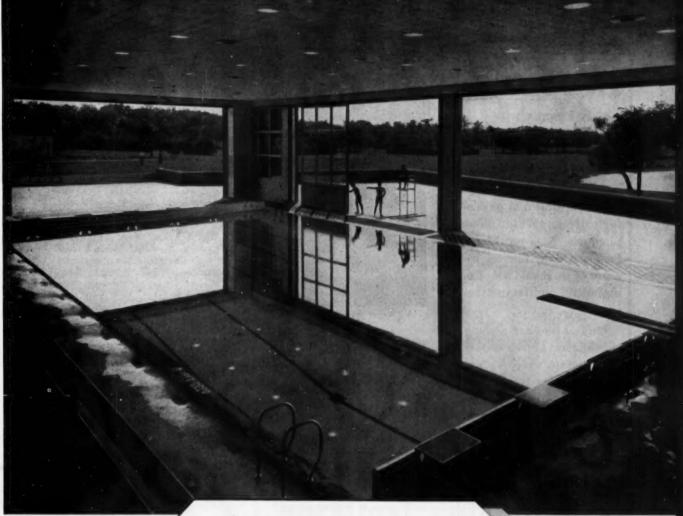
is that the tax-financed work is government-directed; ours, we do ourselves.

"We have a clear conscience in what we're doing," Hobson asserts. "We are operating completely within









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RESEARCH



the letter and spirit of our nonprofit tax application. What our critics really want," he claims, "is to see the law changed."

"If we went 'profit' and had to pay income taxes, we would have to charge more for our industrial activities or cut down on our public service work. It's a simple matter of bringing in more money. Unfortunately," laments Hobson, "the per cent of surplus, as we now operate, would not satisfy private investors.

"And, much as I would hate to see it happen, our 'associates' program would have to be broken up. It not only brings in revenue but also it brings the associate companies into the family, gives SRI a broad base of industrial support.

"Of course," he admits, "there would be compensating factors. If we went 'profit' we could advertise (which

* More than \$1.5 million a year, subscribed to by 80 associated firms and individuals. An SRI subscription unit is tagged at \$15,000; 100 units are now outstanding. we don't do now), be aggressive and commercial in our promotion, wouldn't have to worry very much about what our competition thinks and feels.

"Then, too, we might really become

"We have a clear conscience in what we're doing."

competitors to testing laboratories and consultants." Hobson emphasizes, despite strong opinion to the contrary by the American Assn. of Testing Laboratories, that SRI does not compete with either consultants or testing laboratories.

"We are not set up for either type of work," he says. "We lean over backward to avoid interpreting the results of our work, leaving that to the sponsoring company or its hired consultants; and our people are too high-priced for routine testing.

"Actually," Hobson relates, "we make work for both groups, referring companies to them as a matter of course. Only recently we refused to conduct a consumer-acceptance test, a food-production control test, and a test on an electrical gadget."

Hobson also has a reply to assertions that educational institutions ought to be doing only fundamental research, should not be operating separate laboratories to cash in on government-applied research and development contracts.

"That's fine with me," he states, "SRI is not an educational institution, and it isn't luring university people away from fundamental studies. As a matter of fact," he explains, "Stanford University set up SRI for the specific purpose of getting out of applied research.

"SRI is autonomous; we hire our

Government work accounts for a varying slice of income at the not-for-profit research institutes:

Institute	% annual revenue in
	government contracts
Armour Research Foundation	70
Battelle Memorial Institute	55
Cornell Aeronautical Laborato	ry 94
Franklin Institute	85
Mellon Institute	7
Midwest Research Institute	55
Southern Research Institute	51
Southwest Research Institute	42
Stanford Research Institute	48

RESEARCH.

own people, do not use university researchers. And, to keep the record clear on the government angle, SRI was set up with the advice and help of Western industry for the primary purpose of doing applied research and development for industry."

In no way an official statement of other institutes' positions, Hobson's views, of course, are entirely his own. How compelling they are depends chiefly on your perspective. If you are one of those who have leveled "unfair competition" charges at the institutes, you may take a lot more convincing.

Alkaloids Go Synthetic

A pioneer commercial synthesis of tropane alkaloids is being readied for service. That's the news from T. and H. Smith Ltd., pharmaceutical makers of Edinburgh, Scotland.

Significance: natural sources (e.g., belladonna leaves) can now be augmented and possibly replaced by a synthesis that uses furan as a raw material. It should add up to a greater and more stable supply of such drugs as atropine, hyoscyamine, and homatropine.

The Smith process is an old technique with a new twist: furan replaces pyrrole in the preparation of succindialdehyde—a principal starting reagent of the classic Wilstaetter-Robinson alkaloid synthesis. Succindialdehyde, in turn, is condensed with methylamine and acetone to yield tropinone, key intermediate in the synthesis of tropine, atropine, etc.

Until now, the catch to commercialization has been in obtaining the succindialdehyde at a practical cost. Best known synthesis was from pyrrole, but this is uneconomic. By starting with furan, T. and H. Smith claims it can get succindialdehyde at a cost low enough to make synthetic alkaloids competitive with the natural products.

Atropine makers such as S. B. Penick & Co. and Sandoz are watching the commercial progress of the synthesis with interest and, perhaps, some concern; both now extract the alkaloid from natural sources. Gane and Ingram Inc. (stateside representative of T. and H. Smith) however, is in no possible jeopardy from this manufacturing advance.

And neither, apparently, is Winthrop Stearns. Sterling-Winthrop Research Institute (Rensselaer, N.Y.) has perfected an atropine synthesis, which already has yielded 300 lbs. for the Army.

One grimly important side to the

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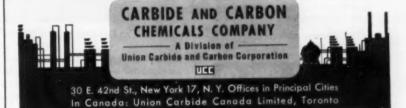
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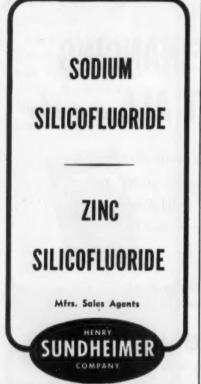
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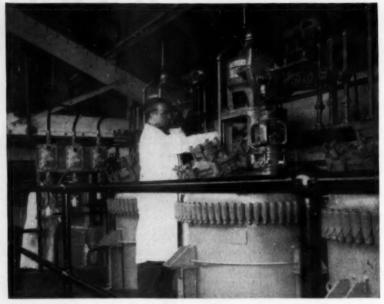
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ALKALOID PRODUCTION: Synthetics are the newest look.

picture: atropine is the only proved antidote to nerve gases. A feasible process could literally be a lifesaver in time of war if imports of belladonna, etc., are cut off.

But the peacetime uses of tropane alkaloids should be numerous enough* to support the newly developed process. Homatropine is popular for treating peptic ulcers. Atropine is being used more and more in bronchial asthma and relief of whooping cough. Hyoscyamine is prescribed as a hypnotic and sedative. Members of this family are also useful in veterinary medicine.

So far, only a few alkaloids have been synthesized on a commercial scale. Several kinks remain to be ironed out of the synthesis of tropine and still more problems are connected with the preparation of the derived alkaloids. Nevertheless, the T. and H. Smith development has caused a major splash of interest in this country. Synthetic alkaloids that are inexpensive and still meet the required purity standards will be a major innovation even in the synthetics-minded drug trade.

Fish Fare: A new development at Atlantic Fisheries Experiment Station (Halifax, Nova Scotia) has the undivided interest of North American fish processors. The work of researcher A. Guttmann, it's a technique of converting (at high temperatures and pressures) fish processing waste into

One industry expert estimates that tropane alkaloids are included in about 4% of all prescriptions written in the U.S. "synthetic egg white." Cakes baked with the "synthetic" product are said to look, taste and smell like those made with fresh egg whites.

Claimed to be economically attractive, Guttmann's method may permit the utilization of great quantities of waste from boned fish. It's now in the pilot plant. If it proves out, the process will mark substantial technological progress since the development of a comparable (though very costly) German process during World War II.

Expanding: Finishing touches are now being put on the new Mobile (Ala.) research laboratory of Courtaulds, Inc. Designed and constructed by H. K. Ferguson Co., the laboratory is adjacent to the company's new 50 million lbs. year rayon staple plant.

New Oxides: Straight-chain butylene oxide isomers are now available on a commercial scale from Dow Chemical Co. The compounds are put up as a mixture (containing less than 1% isobutylene oxide) of 1,2-butylene oxide with small amounts of 2,3-butylene oxide. Potential uses hinge on the oxides' ability to form polybutoxy compounds, which, in turn, combine with ethylene and propylene oxides to yield polyglycols. Its newest offering, Dow claims, will extend the use of epoxide compounds for detergents, emulsifiers, plasticizers, intermediates, etc.

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Chromium Fluoride Copper Fluoborate Fluorboric Acid Fluorine Cells **Fluorinating Agents Frosting Mixtures**

Hydrofluoric Acid Anhydrous

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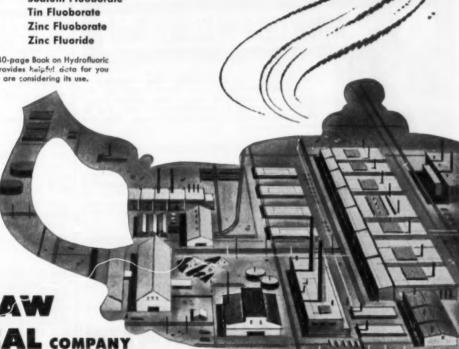
AQUEOUS

Acid Aqueous Hydrofluosilicic Acid **Lead Fluoborate Metallic Fluoborates** Potassium Bifluoride **Potassium Chromium** Fluoride Potassium Fluoborate **Potassium Fluoride Potassium Titanium** Fluoride

Sodium Fluoborate

Silico Fluorides

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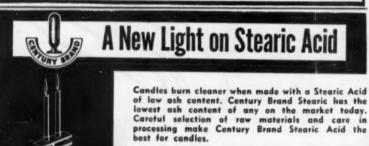


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RESEARCH. . .

mercaptan and a diearboxylic acid, thiomalic may prove useful in the treatment of poisoning by several metals; it is also a diuretic. Added use possibilities exist in coatings and synthetic rubber.

Butter Keepers: Off-tastes in cold storage butter is the target of probes now under way at the Netherlands' Central Institute for Nutrition Research (Utrecht). Gallic acid, octyl, decyl and dodecyl gallates have all been tried, with little progress in preventing unpleasant flavors. Now, institute researchers report success in tests of tetramethylthiuram disulfide, and its tetraethyl homolog.

Butter stored in sub-freezing temperatures is not subject to microbiological deterioration. But the butter's unsaturated fatty acids are vulnerable to undesirable chemical changes.

Bleach Boost: The Du Pont Co.'s F. L. Fennell (Electrochemicals Dept.) is credited with the development of a better method of bleaching kraft and other chemical pulps with peroxide. Key: acid treatment prior to bleaching. Covered by new patent 2,668,-905, Fennell's technique is claimed to vield pulps with high brightness and color permanence.

Longer Lasting: University of Wisconsin Medical School probers have spotlighted a promising isoniazid-related TB fighter. The new derivative is 1,1'-methylenebis (2-isonicotinyl hydrazine), has given rise to no observed toxic reactions. It's still in the experimental stage.

New Fluorocarbons: Interesting and potentially valuable perfluoro olefins are the subject of a new process patent (2,668,864). Assigned to Minnesota Mining & Manufacturing Co. (St. Paul), the patent protects a dry-reaction procedure that works like this: anhydrous alkali-metal salts of perfluoroalkyl monocarboxylic acids are heated to 200-350 C; controlled decomposition results in high yields of unsaturated fluorocarbons.

For the Asking: A method of stabilizing glyceride oils, subject of patent 2,661,358, is available under a nonexclusive license from the government. Administered by Office of the Solicitor, Dept. of Agriculture, the patent deals with stabilization of both animal and vegetable oils by the addition of small amounts of chelidonic or chelidamic acids. Resulting glycerides may be used in pharmaceuticals, cosmetics and food preparations.

	TRIETHYL CITRATE	ACETYL TRIETHYL CITRATE	TRIBUTYL	ACETYL TRIBUTYL CITRATE
Plasticizer	C ₃ H ₈ O	C ₈ H ₇ O ₂ (COOC ₂ H ₆) ₃	Cooc, Hols	C00C1H012
Empirical Formula	(COOC ₂ H ₆) ₂	318.3	360.4	402.5
Molecular Weight (Theoretical)	276.3	VPICAL PHYS		TIES

TYPICAL PHYSICAL PROPERTIES

Color Distillation Range at 1mm Hg. Refractive Index Specific Gravity Pounds Per Gallon Pour Point Viscosity Solubility in Water 25°C 25°C 25°C 25°C 25°C 25°C 25°C 25°C		10 126-7 1.4400 1.136 9.48 -50 35.2 6.5 0.8 0.000676	<50 131-2 1.4380 1.135 9.47 -45 53.7 0.72	50 169-70 1,4431 1.042 8.69 —80 31.9 <0.002 — 0.000065	172-4 1.4408 1.048 8.74 -75 42.7 <0.002
Solubility in Oil Evaporation Rate 105°	C. Grn./sq.cm./hr.	0.000		MPATIBILITY	

RESIN COMPATIBILITY

	C	C	1,5	P
Cellulose Acetate	C	2	C	C
Cellulose Acetate-Butyrate		The Contract of	C	
Cellulose Nitrate	10000	Maria C	C	
Eshal Callulose	-	Ele Million	C	
- I Chloride			C	
			C	
Polyvinyl-Vinylidene Chories				
Polyviny Acetais	10000	STATE OF THE PARTY		
Polyvinyl Butyral				
Chlorinated Rubber				

P = Limited Compatability C = Compatible



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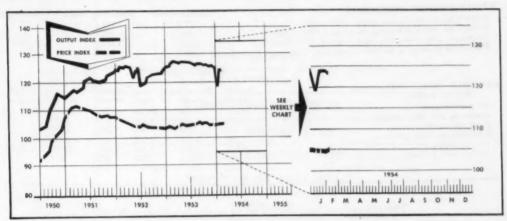
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CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

Market-place prognostications aren't yet steeped in gloom (see p. 15), but trade observers, for the most part will not argue that a desired briskness in chemical movements just isn't there. Big factor in the control of activity, of course, is slackening in demand from consumers.

Take some of the heavy chemicals, for example. Chlorine producers are showing a little concern over increasing stocks. Output has been cut back at some quarters in an effort to bring the market into a semblance of balance, but the result is showing up more in caustic soda than in chlorine.

That doesn't mean caustic shipments are slumping, but deliveries at the moment are off, even when compared with the last quarter of 1953. There's no indication, however, that prices will be nudged downward in the immediate future—a reflection of makers' conviction that business will perk up in the spring.

Carbon tetrachloride sales aren't at a peak right now. But while most of the minor users—like textile and leather degreasing and some solvent outlets—have eased up on their take this month, carbon tet calls from big-time consumers bid fair to overshadow the lag.

Air conditioning is on a zoom and with it a concomitant hike in requirements for fluorocarbon manufacture. Toxaphene, the carbon tet gulping insecticide, too, is back in the market.

On the other hand there's more zinc off the market. You can add this to the zinc production cutbacks (see page 87): output from New Jersey Zinc's smelters in Palmerton (Pa.) and Depue (Ill.) will be further slashed by some 2,000 tons/month.

Meanwhile, later word on the meeting between the President and zinc-interested senators, which took place last week, brought about a promise that the government will do "whatever is possible to stabilize the lead and zinc industries."

One possible bolsterer may be further government buying. The question of metals stockpiling came up at the meeting, but no details were forthcoming.

MARKET LETTER.

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-100)	. 123.5	123.5	126.9
CHEMICAL WEEK Wholesale Price Index (1947=100)	. 105.1	105.0	103.2 1.428.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.	1,350.0	1,306.0 269.9	254.7

	Manufacturers'				Manufacturers'		
MONTHLY INDICATORS—Trade (Million Dollars)	Latest	Preceding Month	Year	Latest	Preceding Month	Year Ago	
All Manufacturing	.24.097	24,304	24,706	46,719	46,899	44,190	
Chemicals and allied products	1.569	1,606	1,606	3,119	3,107	2,942	
Paper and allied products	704	709	675	1,045	1,050	1,075	
Petroleum and coal porducts	2.180	2.113	2,082	2,685	2,747	2,543	
Textile products	1.042	1.006	1,144	2,487	2,543	2,616	
Leather and products	. 264	251	288	397	374	531	

The price-prop that didn't work is the label being hung on crude glycerine. Slashes in refined prices last week—started by a major soaper and followed almost immediately by the synthetic producer—surprised some segments of the trade because crude tags had been inching up over the past few weeks.

But, as was indicated here (CW Market Letter, Feb. 6), refiners were inclined to regard the crude increases as not significant, as merely representing a transitory trend from the previous month's sagging.

The $4\phi/lb$, cut pegs synthetic and dynamite-grade material at 30ϕ (tanks). Responsibility for the drop is laid to reduced demand from alkyd resin makers.

Question being bruited around the market place is whether or not lower glycerine will affect competitive-product prices. Pentaerythritol producers, at least, insist there'll be no change in their schedules—at any rate not in the immediate future. They cite PE's relative stability (compared with fluctuating glycerine) as a likely line holder.

Even if supply/demand conditions become unfavorable, odds are any PE change would not be as drastic as the glycerine reduction.

More anent the ailing nonferrous metals market. Domestic lead consumers' expectations that a price cut was imminent, were fulfilled late last week. The metal dropped another $\frac{1}{2}\frac{e}{l}$ lb., setting the N.Y. price at $12\frac{1}{2}\frac{e}{l}$ lb.

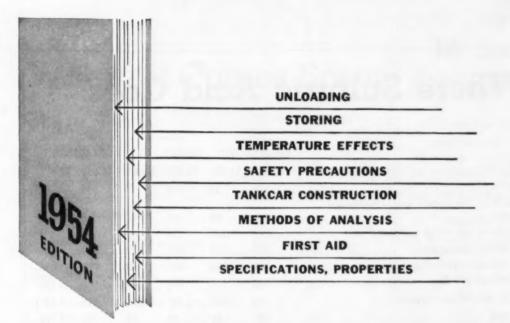
Lead pigment prices, apparently poised for the metal plop, skittered a like $\frac{1}{2}$ ¢/lb. Dry red lead, litharge and orange mineral tags now read 15¢, 14¢ and 18¢ (all c.l.), respectively.

Paint makers, now in the throes of laying plans for the spring season, plus the new lowered prices, may well add up to a more pressing demand for the pigments in the next few weeks.

SELECTED CHEMICAL MARKET PRICE CHANGES-Week Ending February 22, 1954

DOWN			_				
	Ch	ange	Ne	w Price	C	hange	New Price
Glycerine, ref. CP, tks	. \$.04	\$.29	Lead Oxides-Litharge, c.l.	.005	.14
Glycerine, synthetic, tks		.04		.30	Dry red lead	.005	.15
Zinc dust, pigment, BBLS., c.l. wks Vitamin B ₁₂ , cryst., gram		.0025 50.00	25	.125	Orange mineral	.005	.18

All prices per pound unless quantity is stated.



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(thousands of	short tons)				
	1950		1951		1952	
	GROSS	NET	GROSS	NET	GROSS	NET
USE—TOTAL	13,987	11,981	14,653	12,220	14,644	12,075
Alcohols	516	53	648	62	650	62
Aluminum sulfate (for public water treatment				-		
and sewage)	83	83	95	95	85	85
Aluminum sulfate (for other purposes)	280	280	298	298	275	275
Ammonium sulfate (coke oven)	639	639	678	678	608	608
Ammonium sulfate (synthetic)	869	869	483	483	628	628 143
Aviation gasoline	824	144	981	120	1,181	
Chemicals not elsewhere classified	984	952	1,197	1,152	1,245	1,199
Chlorine drying	32	16	39	19	40	19
Chromium chemicals incl. chromic acid	64	64	86	86	60	60 27
Copper sulfate	20	20	31	31	27	
Dyes	196	145	202	145	150	108
Fat Splitting	18	18	16	16	15	15
Hydrochloric acid	129	129	137	137	128	128
Hydrofluoric acid	114	114	137	137	135	135
Industrial explosives	375	64	403	71	375	64
Industrial water treatment	30	30	35	35	30	30
Inorganic pigments	1,322	1,245	1,331	1,251	1,249	1,174
Insecticides	99	81	125	78	130	82
Iron and steel (pickling)	1.027	1,026	954	953	838	838
Light oil refining (coke oven)	62	51	71	57	64	52
Medicinals	28	28	37	37	33	33
Nonferrous metal pickling	22	22	18	18	18	18
Other nonferrous metallurgical purposes	189	172	223	198	200	178
Other petroleum products (except sulfonated hydro-						
carbons)	598	406	592	407	482	333
Petroleum catalysts	123	123	143	143	155	155
Petroleum sulfonates (lube oil additives)	128	63	151	81	150	80
Phosphatic fertilizers	3,790	3,790	3,944	3,944	4,053	4,053
Rayon (high tenacity yarn)	192	192	197	197	274	274
Rayon (other)	354	354	359	359	255	255
Regenerated cellulose film sheet or products	124	124	131	131	105	105
Rubber (including synthetic)	103	103	135	131	110	106
Storage batteries	78	78	3 74	74	60	60
Sulfonated oils	6		5	5	5	5
Synthetic detergents	202	149	217	157	225	162
Tall oil	37	37	7 46	46	39	39
Textile finishing	37	33	7 31	31	28	28
Miscellaneous 6	293	274	403	357	539	459

Where It Comes From

(thousands of short tons)

	1950	1951	1952
SUPPLY—TOTAL	14,030	14,649	14,627
Production ¹	12,143	12,389	12,344
Contact plants	9,187	9,503	9,635
Chamber plants	2,956	2,886	2,709
Spent acid fortified in producing plants ²	887	984	965
Spent acid collected for reuse as such Total recovery ³	957 2,006	1,216 2,433	1,285 2,513
Less spent acid fortified in producing plants	887	984	965
Less spent acid used for decomposition to new acid	n 162	233	263
Imports ²	43	60	33

1 Production data as reported by the Bureau of the Census exclusive of output from government plants. Production includes new acid from decomposed spent acid.

² As reported by the Bureau of the

Census. In the instance of imports as reported by census, no specific strength of H2SO4 is specified. The data were assumed as referring to 66 degrees Bé and in thousands of tons were as follows: 1950—46; 1951—65;1952—36. These import data were converted to 100 per cent H2SO4 basis.

⁸ Based on reports to the former Na-tional Production Authority (forms NPAF-74, 159, and 161), and on a special survey covering the recovery of spent acid during 1950 and 1951. Data for 1952 were partially estimated.

4 Based on reports to the former National Production Authority (Form NPAF-39 for January 1, 1951 and other reports for later years). Includes government plants.

5 Includes boric acid, citric acid, ethylene dibromide, hydroquinone, oxalic acid, phenol, sebacic acid, sodium phosphates and other chemicals.

Includes "small orders" exempt from reporting, estimated as follows in thousands of short tons for each of gross and net usage: 1950-118; 1951-172; 1952-140. The miscellaneous segment also includes export, military explosives, parchment paper, silica gel and other uses, the disclosure of which may indicate individual company data.

Spotlight on Sulfuric

U.S. consumption of sulfuric acid in 1952 was approximately equal to that of the 1951 peak year, according to the distribution study released late last week by the Chemical and Rubber Division, Business & Defense Services Administration, Dept. of Commerce. Most of the increases and decreases in acid consumption shown for the various outlets reflect changes resulting from the Korean war.

The latest end use pattern issued by BDSA is the second of a series slated to cover some 55 major chemicals. (First was benzene, CW, Jan. 2.)

From 1950 to 1951, gross consumption of sulfuric stepped up almost 5%, owing mostly to a greater use of spent acid, while net consump-

tion increased only 2% as a result of sulfur conservation measures. Since elemental sulfur is the principal raw material for the acid-e.g., about 79% of the virgin acid then produced in the U.S. was made from low-cost brimstone-efforts to conserve it directly affect acid output.

Sulfur demands for a number of years before 1950 had exceeded production, and during the later months of that year some sulfur producers began parceling out the vital chemical to customers as a brake on rapidly dwindling stocks.

By spring of the next year the government took cognizance of the tightening trend, stepped in with the first of a series of orders controlling

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pipe thread openings each end. Wt. 5 lbs.

D-2A, 6*24* Carbon steel, 500 PS1 ½*
pipe thread openings each end. Wt. 5 lbs.

D-3A, 6*34* Stainless steel, 500 PS1 ½*
pipe thread openings each end. Wt. 5 lbs.

J-2, 5*24* Carbon steel, 500 PS1 ½*
pipe thread port. Enulpped with stainless steel shut-off valve and 0-3000 PS1 pressure gauge. Wt. 3 lbs.

H-2, 3½*
219* Heavy carbon steel, 3000 PS1, ½*
pipe thread port. Enulpped with stainless steel shut-off valve and 0-3000 PS1, 2*
pipe thread port. Even year of the stainless steel shut-off valve and 0-3000 PS1, ½*
pipe thread port. Wt. § lbs.

E-2, Bame as H-2 but 4*24* heavy carbon steel, 3000 PS1, ½*
pipe thread opening—weth opening with pipe thread boot opening—weth opening with pipe thread boot opening—weth purchased with vivinder. \$1.00 each. When purchased esperated with vivinder. \$1.00 each. When purchased esperated \$ 8.25

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OTHER ITEMS - SEND INQUIRIES CHEMICAL SERVICE CORPORATION 96-02 Beaver St., N.Y. 5 HAnover 2-6970 both sulfur and sulfuric acid. A limited

allocation control on the acid, for

An acute sulfuric supply situation was apparent during 1950, '51 and the early part of '52, with demandincluding defense needs—outstripping availability. Korea-spawned requirements were the prime factor, however, urging the establishment of an industry expansion goal under the defense mobilization program. Special emphasis was placed on expansion of facilities for turning out the acid from nonelemental sulfur sources (pyrites, spent acid, smelter and refinery gases).

Production in 1952 by commercial processes came close to top-year 1951's level, moved some 2% over 1950. Contact acid output continued its upward trend during the three years; virtually all build-ups during this period were in contact-type facilities. On the other hand, chamber acid production declined. Total productive capacity, including government plants, showed an increase of 10% from Jan. 1, '50 to Jan. 1, '53:

Sulfuric Capacity

(thousands of short tons)

1950	13.238
1951	13,413
1952	14,220
1953	14.561

(See footnote 4, box p. 85)

Sulfuric acid producers, for the most part, usually maintain their stocks at a level sufficient only to meet normal shipments. Here's how quantities in producers' hands hopped up: On Jan. 31, '51, the amount of acid totaled 289,000 tons; on Dec. 31 of that year, 321,000 tons; and one year later, on Dec. 31, '52, the figure hit 404,000 tons.

BDSA's look-see at the past consumption pattern clearly indicates a broadening horizon of future needs.* Use of sulfuric in the production of

* For a rundown on future burgeoning industrial demand and price outlook, see CW's "Sulfuric on the Escalator", July 11, '53.

phosphatic fertilizers rose steadily during the 1950-52 period covered by the distribution pattern. About one-third of the net acid consumption is accounted for by fertilizer requirements. The continued increase, of course, was possible only because of greater utilization of spent acid as a substitute for new or virgin acid.

Iron and steel needs dropped in '51 for two reasons: change in the type of steel items made, and a more frugal use of acid. The decline in '52 was due in part to the widespread steel strike.

The hike in military requirements—stimulated largely by the Korean emergency—is underscored by the increased use of sulfuric in such commodities as aviation gasoline, alcohols, high-tenacity rayon, petroleum catalysts.

Industry criticism of BDSA's first distribution pattern centered on the fact that many benzene outlets were still unrevealed, shrouded in anonymity under a catch-all "miscellaneous" category.

The close pinpointing of sulfuric acid end uses, however, should satisfy even the most curious marketer.

Zinc Skidding

During the last two weeks three events further highlighted the critical condition of the U.S. lead and zinc mining industry. The underscorers:

 A second round of production cutbacks by two leading zinc producers.

 Another ¼¢/lb. drop in zinc prices, bringing the new tag to 9¼¢/ lb. (St. Louis).

 A meeting between President Eisenhower and four Senators who asserted keen interest in the "distress" of eight Western zinc-producing states.

It's a moot question whether or not the high-level discussion will result in any immediate benefit; but producers, meanwhile, have apparently decided that one solution to current zinc oversupply is to again slash output.

Earlier this month National Zinc announced a reduction of 500 tons/month at its Bartlesville (Okla.) plant. That move was followed closely by St. Joseph Lead's notice that it, too, for the second time since November, is cutting back production at its Josephtown (Pa.) smelter. The latest reduction, about 1,500 tons/month, knocks the Josephtown output down to about 66% of capacity.

The two new announcements bring the number of producers who are re-





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 MARKETS.

ducing zinc turnout to seven, hikes the total cutback figure to more than 12.000 tons/month.

Zinc market followers believe that if all the reductions are carried out according to schedule, total domestic refined zinc output by the end of March will drop to between 60,000 and 70,000 tons. Compare that with the 1953 monthly average of nearly 81,000 tons.

There's a thin thread of optimism running through the industry, however—if not for the present situation, then at least for the foreseeable future. Marketers believe that with a slightly better showing in shipments to consumers this month, and the big looming drop in production, the spread between output and deliveries—a near 19,000-tons last month—will be whittled to a healthier 5-10,000 tons.

Domestic hopes are up, too, that with European demand at fairly good levels, and the London price now high enough to discourage shipments of foreign zinc here (CW Market Letter, Jan. 30), the market may in the next two months or so get ready to bounce off its bottom.

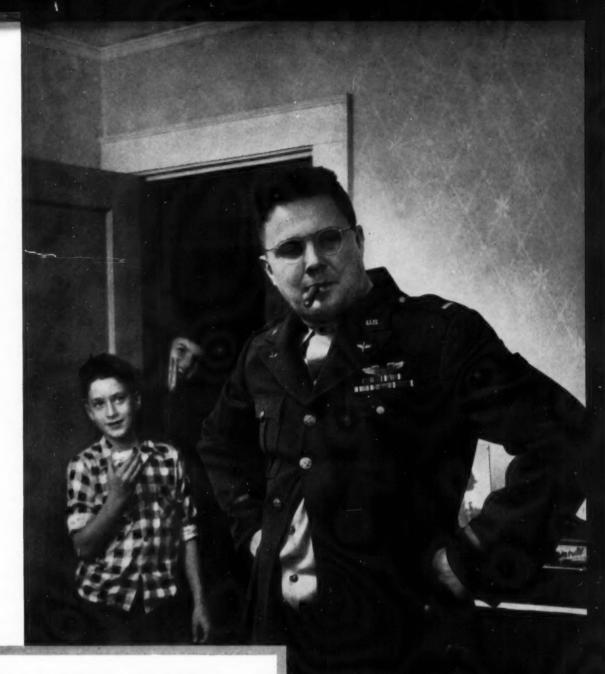
Margarine March

Oleomargarine makers, elated over booming sales—up some 6 million lbs. in 1953 over the previous year—expect 1954 year-end figures to break all previous production and use records. Joining in the elation are several chemical process industries. For a large proportion of every pound of margarine made consists of hydrogenated oils, colors, vitamins, etc. For example, nearly 25% of all soybean oil produced in the U.S.—and a slightly lower percentage of the cottonseed output—winds up in oleo.

Just-released statistics from the Census Bureau indicate last year's production of margarine amounted to almost 1,292 million lbs., slightly better than the previous year's 1,286 million. Of the 1953 total, about 1,228 million lbs. were colored.

A recent statement by the National Assn. of Margarine Manufacturers also underlines the continuing uptrend of the butter competitor. Magarine consumption, says the group, ran nearly 14% ahead of creamery butter sales in normal commercial channels last year. By contrast, 20 years ago the margarine industry was nearly needled out of existence by crippling federal and state restrictions.

During the last year four more states—leaving only Minnesota and Wisconsin—repealed bans on the sale of vellow margarine.



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